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THE ESOPHAGUS.*

CICATRICAL STRICTURE THEREOF; ITS TREATMENT.

CHAIRMAN'S ADDRESS.

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Esophageal obstruction is a subject which must command the attention of every thoughtful surgeon. The inaccessible situation of the gullet, its relation to important structures, and the difficulty attending manipulations within its narrow lumen, all tend to place it among the surgical problems which are difficult of solution. The cases are sufficiently rare to render an individual experience incomplete, and yet are frequent enough to stimulate our best endeavor for their relief.

Koening makes a very practical classification of esophageal obstructions into:

1. Those located within the esophagus, such as inflammatory spasmodic or cicatrical strictures, foreign bodies, tumors and diverticula.

2. Pressure obstructions located without the esophagus, especially tumors involving the thyroid body, tracheal and mediastinal glands, or aneurysms of the arch of the aorta. Abscess from Pott's disease may also be the cause of pressure obstruction.

It is to a variety of the first group that I wish to call your attention at this time.

ETIOLOGY AND GENERAL CHARACTER.

Cicatricial stenosis of the esophagus is the result of the healing of an ulceration. The latter is produced by a traumatism, such as the swallowing of caustic alkali, acids or hot fluids; occasionally by a wound, or may be due to the prolonged lodgment of a foreign body. The most common cause, and especially so in children, is the accidental swallowing of concentrated lye.

In adults carbolic acid, ammonia, etc., are not infrequently taken, but the immediate mortality from the poisonous effects of the substance swallowed reduces the number who live to develop cicatrix to a small proportion.

The breaking down of a syphilitic gumma may leave an ulceration, and cases of stricture having its origin in this manner have been reported by Lubinski. Senn says that syphilis may cause a fibrous stricture of any portion of the alimentary canal and states that it is not ulcerative in character.

Tubercular ulceration of the esophagus is usually secondary to the swallowing of infected sputum. Flexner reports 19 cases and Cone 28 of this variety. None of these cases healed to such an extent as to cause stricture. Primary tuberculosis of the gullet is very rare; however, it occurs and may be the cause of stenosis. Zenker reports such a case. Poncet cites a case of obstruction due to the ulceration attending actinomycosis; no attempt at healing was noted, the interference being mechanical. Fibrous strictures of the esophagus without ulceration have been variously described as idiopathic, syphilitic, gouty, rheumatic or due to chronic esophagitis. Audry records two such cases supposed to be cancerous, which after death proved to be due to hyperplasia of the muscular coat. Ingals reports several instances occurring in one family. Rumpel cites a case of fusiform dilatation of the esophagus, due as he believes to a spasmodic contraction of the thickened muscular coat at the lower end of the gullet and collects 20 cases from medical literature.

The pathologic condition found in the reported cases of this description shows a remarkable resemblance to the large fibrous stricture of the pylorus and to that form of fibrous stricture of the rectum the etiology of which has been the subject of controversy for years. It is probable that these strictures of the alimentary canal have a common origin, and for convenience fibrous strictures of the gullet are classed with the cicatricial form.

Simple strictures of the esophagus, of unknown origin, are not uncommon. Kendall Franks records a number of this variety. Ewald states that the simple or peptic ulcer may be the cause of stenosis and cites cases; it is possible that this is the etiology of many of the so-called simple strictures. Congenital strictures are described at length by Carey, with a report of cases from the literature of the subject.

As the treatment of the simple and congenital forms is essentially the same as that of the variety under discussion, they are included in the same class. The locations of strictures of the gullet for anatomical reasons are most common in three localities: 1, at the isthmus of the esophagus opposite the cricoid cartilage; 2, at or near the bifurcation of the trachea where the gullet is crossed by the left bronchus; 3, at the diaphragmatic opening. According to the researches of Hacker this latter locality is most commonly affected by caustics.

In the adult the gullet is from nine to ten inches in length, and Richardson has shown that from the incisor teeth to the diaphragmatic opening it is about 14½ inches, measurements which aid the exact location by the sound. If the stricture can be passed by an olive bougie. Tillman advises that the tip be inserted well beyond the stenosis; on withdrawing, the handle is marked as resistance begins and again as it passes through the stricture. The distance can thus be easily estimated. Not infrequently several strictures are found, or the whole of the esophagus may be obliterated, as in cases reported by Richardson and also by Hacker.

DIAGNOSIS.

The diagnosis of the obstruction is easy, in fact, advanced mechanical stricture gives a group of symptoms which are self-evident; of these dysphagia and regurgi-

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tation of food are most prominent and if the obstruction lies in the cervical portion dysphonia and dyspnea may be observed. Sounding with suitable bougies completes the diagnosis.

In children with advanced cicatricial stenosis, the emaciation, the anxious, hungry expression, the constant desire for liquids and rapid regurgitation form a clinical picture which hardly needs a question. In adults the differentiation as to the nature of the stenosis may be more difficult.

Spasmodic stricture is not rare, and usually occurs in people of a hysterical tendency. According to Mansell Moullin, slight traumatisms are frequently the exciting cause of the hysterical form and the injury may be grossly exaggerated by the patient. The lack of sufficient cause, the suddenness of the onset and the neurotic history will usually suffice to clear up the diagnosis. Yet cases are recorded by Pepper and others in which it was necessary to resort to sounding under anesthesia to positively exclude organic stricture.

Esophageal diverticuli may cause difficulty in diagnosis. The origin of these pouches is stated by Maylard to be: 1, congenital; 2, the result of a strictured condition below; 3, from pressure or traction. These diverticuli are most common on the posterior wall about on a level with the cricoid cartilage. Error in sounding is thus liable to occur, the bougie passing into the pocket. The possibility of such occurrence will put one on guard and prevent serious difficulty in differentiation.

Butlin has collected a number of cases from the London hospital reports, many of which have been diagnosed as stricture. Malignant strictures and pressure tumors suggest at once clinical phenomena which will render exclusion easy.

Esophagoscopy cannot be considered an important aid to diagnosis. Hacker in Billroth's clinic used a Leiter panelectric light, with small benefit, and while numberous devices have been developed since, not much evidence of value has accumulated. Stork describes a new esophagoscope, but its usefulness seems uncertain. Einhorn is one of the few authorities who place reliance upon this clinical method in diagnosis.

PROGNOSIS.

The prognosis of untreated cicatrical stenosis is bad, there is a constant tendency to contract, indeed there seems to be no limit to this process.

The esophagus gradually dilates above the stricture, its muscular coat hypertrophies and by a squeezing process some nourishment is forced through the stenosed portion until a late date, the starvation being a very slow process. In time fatty degeneration of the muscle fiber renders it unequal to its task and also makes instrumentation exceedingly dangerous. Many deaths have been reported from instrumental perforation, by Sands and others. A casual examination of the literature of the subject leads one to think that this is not an uncommon accident in attempts at sounding in late cases. Weinlechner describes an island-like stricture which may prevent the passage of solid food and yet not cause complete obstruction to a fluid diet for an indefinite time. I have observed such a case.

CASE 1.—*Stricture of Esophagus Impermeable to Bougie—Comfortable Existence for Years on a Fluid Diet.*—Mrs. P. McK., aged 36 years, the mother of a large family, in August, 1891, gave a history of having swallowed caustic lye when a child; since that time she has lived on a fluid diet, being able to swallow only strained liquid food. She has frequent attacks of regurgitation lasting several days at a time, and thinks that on an average one-third of the food is regurgitated. At times she gets very thin.

She is a badly nourished woman, of slender build and anemic appearance. Careful sounding reveals a dense stricture near the cardic end of the esophagus. Above the stricture the esophagus is dilated to a considerable extent. Repeated examination failed to pass the stricture. The patient refused any operative interference, and has passed from observation.

TREATMENT.

The treatment of traumatism of the esophagus at an early period, before contraction takes place, is of the utmost importance. Many of the unfortunate results in this way can be avoided or rendered manageable. After the swallowing of a caustic substance systematic sounding should be commenced in from two to four weeks (Meyer). Foreign bodies should not be allowed to remain in the esophagus until ulceration is produced, and prolonged attempts at removal through the mouth can not be considered good surgery. Gerster directs attention to the ease with which foreign bodies can be removed through an external esophagotomy if done early, before ulceration has taken place; in this way Dr. C. H. Mayo has on five occasions readily removed foreign bodies from the lower part of the esophagus. The X-ray is of great value in locating many of these bodies, and a right incision in the neck instead of the ordinary left may be indicated, as in a case of an impacted overshoe buckle in which the loop to the right and the sharp prongs to the left decided the question[1].

In the lower esophagus the method of Maurice H. Richardson—removal through an incision in the stomach wall—is of the greatest value and must rank as one of the achievements of modern surgery. Tillman strongly advocates preliminary gastrostomy for feeding purposes in the primary stages of acute ulceration, thereby lessening the infection and hastening cure. In tubercular and syphilitic ulceration appropriate constitutional treatment should be used in conjunction with the sounding during the period of cicatrization.

DILATABLE STRICTURES.

Gradual dilation is the method of choice in this form of stenosis. The larger and softer the dilator the better, but in many advanced cases such instruments are wholly worthless. In these cases the use of whalebone olive-tipped probes are best for the smaller varieties, and for the larger bougies a whalebone stem to which increasing sizes of metal or ivory olive tips can be attached are the most valuable. If the tip is made very long and tapering it will engage in the stenosed portion more quickly than the ordinary olive tip, which expands so rapidly that one can not easily appreciate whether it is engaged in the stricture or not.

In a previous paper on this subject, read before the Minnesota Academy of Medicine in March, 1894, I exhibited what I then believed to be a new probe in which three or four increasing sizes of bulbs were made on a single stem (Trousseau's), the idea being that the small tip would railroad the others through. As a matter of fact it prevented that elasticity within a few inches of the tip which is a prime essential in a good bougie, enabling one to pass through the curved pharynx without injuriously impinging on the posterior wall. This elasticity is necessary, as it also permits of some play at the point and facilitates search of the face of the stricture for the opening.

Many cases appear to be impermeable to the probe, which in time may be safely passed. The frightened little sufferer adds to the general discomfort and renders a hasty judgment in this regard only too natural. I once heard an eminent genito-urinary surgeon say that

impermeable strictures of the urethra happened largely in an early experience, and I am sure that this is true of esophageal stricture. With care and gentleness a bougie can usually be inserted in the opening, although several sittings may be required. In such cases a number of whalebone bougies lubricated with glycerin should be passed into the gullet and against the stricture in the same manner as filiforms are used in the urethra, and by alternating probes one will usually slip through. It is best to stop here, and then every other day repeat the process, using perhaps several increasing sizes at one sitting; the first probe introduced should have a very flexible handle, and when in place straightens the throat curve so that the larger and stiffer bougies readily follow, each one being left in the stricture until the next one is ready by its side. In a few cases it may be necessary to use an anesthetic the first time or two, but usually the patient will sit on a low stool facing the operator, and from the relief afforded by the ability to retain a little nourishment will soon face the ordeal with an unexpected degree of fortitude. The frequency of sounding depends on the case, every other day being sufficient, and in sensitive cases perhaps too frequent. Many months are occupied in this gradual dilatation, and after apparent cure a sound should be passed occasionally for years.

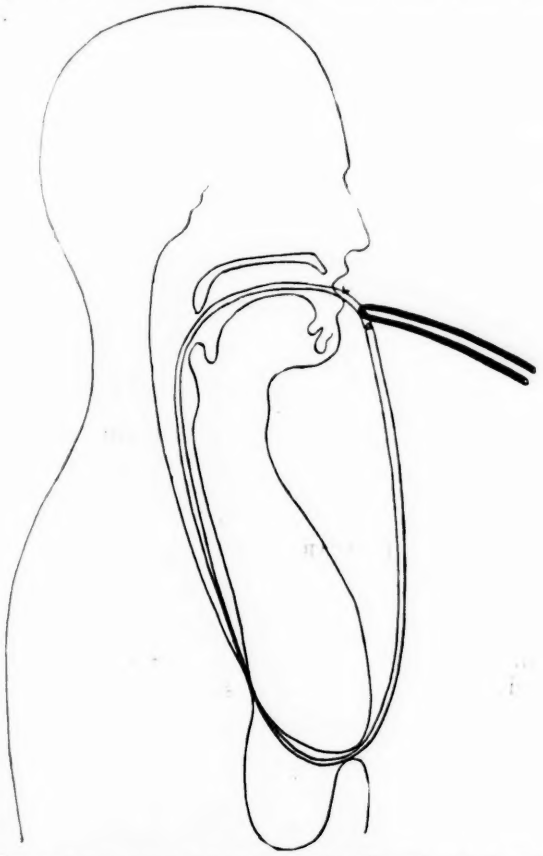

Figure 1 shows manner of introducing the silk cord with the rubber drainage tube looped in position ready for introduction.

Figure 1a shows the manner in which the tube is drawn out in order to pass through a tight stricture.

CASE 2.—*Stricture of Esophagus—Gradual Dilatation—Recovery.*—T. C., a male, aged 2 years, of Mantorville, Minn., was admitted to St. Mary's Hospital, Rochester, Minn., Feb. 24, 1898, with a history of having accidentally swallowed concentrated lye seven weeks previously. Difficulty in swallowing developed at once. At first this was due to traumatism and resulting ulceration, later to the contraction.

At no time since the injury has solid food been taken, and a large part of liquid nourishment swallowed is regurgitated. Before admission to the hospital several attempts at sounding the esophagus had been made, but without success.

On examination a stricture was detected in the thoracic esophagus. Under anesthesia several whalebone bougies were placed in position, and by using first one and then another, a probe was finally passed into the stomach. The stricture dilated easily and a fair-sized bougie was introduced at this time. Systematic sounding every third day was carried out, and March 8, 1898, the little patient was discharged, able to take liquids easily, and chopped meat and softened bread with but little difficulty. Since that time Dr. S. H. VanCleve of Mantorville has continued sounding at intervals, the esophagus being of nearly normal caliber.

NON-DILATABLE STRICTURES.

Stenosis involving a large extent of the esophagus may prevent gradual dilatation or even continue to contract while attempts at dilatation are being carried out, and in a few cases the difficulties and dangers attending the sounding of a tight stricture makes a resort to some more rapid method desirable.

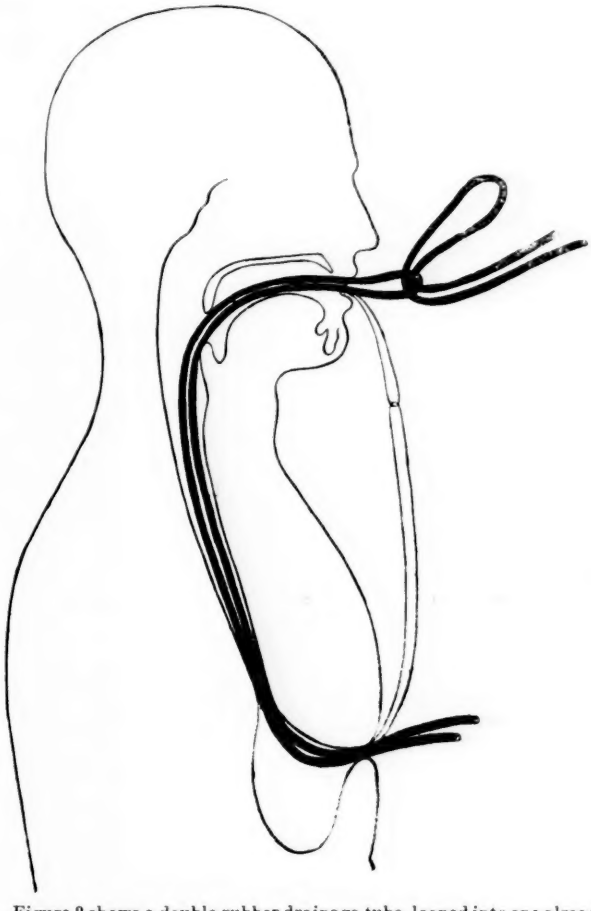

Figure 2 shows a double rubber drainage-tube, looped into one already drawn through. As many tubes as may be necessary to obtain the desired dilatation may be drawn through in this way.

For strictures in the vicinity of the cricoid cartilage external esophagotomy after Billroth is the operation of choice. Like the perineal cut for stricture of the urethra, funnel-shaped retraction of the cut portion is caused by adhesion to the external tissues divided and it lessens future contraction. This operation, first performed by Mitchel and later by Annandale, has stood the test, and should not be long delayed. A most interesting case of this kind is recorded by Christian Fenger[2]. Kendall Franks has successfully performed esophagectomy in a case of simple stricture in this portion of the esophagus, the divided ends being sutured over a tube passed through the nose.

For dense stricture above the arch of the aorta and

below the point which can be directly divided, Gussenbauer's combined esophagotomy is the best operation; through an external incision in the neck a tenotome is introduced and passed downward to the stricture, which is then divided.

I take the liberty to introduce an illustrative case previously reported[3]:

CASE 3.—*Two Strictures of Esophagus—Prolonged Dilatation and Combined Esophagotomy—Recovery.*—J. Haney, aged 4 years, was seen in January, 1893. In the spring of 1892, while living in North Dakota, the child swallowed concentrated lye. After a month's severe illness, he gradually recovered, but with an increasing difficulty in swallowing. During the past three months all food had to be strained and he has frequent attacks of regurgitation. The material regurgitated is brought up somewhat slowly. He is a moderately nourished boy, of good disposition, which materially aided treatment. On the introduction of a catheter it was arrested at the isthmus of the gullet. After some manipulation a No. 3 urethral catheter was passed three inches farther downward, where it was completely arrested.

It was very evident that there was a stricture at the level of the cricoid cartilage, and a second in the intrathoracic portion of the esophagus, undoubtedly produced by the action of the esophageal muscles at the time of the original accident, causing the effect of the lye to be located at these points.

Regular sounding was instituted and continued at intervals of three to ten days, by myself or Dr. C. H. Mayo, with but slight interruption for one year. At the end of two months the lowest stricture was passed by a fine whalebone bougie. This stricture was very dense, and resisted sounding obstinately; it would be only at intervals of several sittings that the bougie could be introduced into the stomach. At the end of a year's perseverance the upper stricture had yielded to the extent of admitting a No. 5 catheter and the lower one a No. 3. The boy was well nourished, did not regurgitate unless he took solid food, and was able to take softened bread and finely chopped meat. During the preceding two months no perceptible improvement was manifest; therefore, on Feb. 15, 1894, he was admitted to St. Mary's Hospital, Rochester, Minn., and on Feb. 16, left external esophagotomy was performed by Dr. C. H. Mayo. The upper stricture was now readily dilated by forceps. The lower stricture, which was below the level of the upper end of the sternum, was carefully nicked with a dull knife on a grooved director and dilated with forceps, permitting of easy catheterization of the esophagus.

Unfortunately, the majority of dense strictures are in the lower esophagus, or if there is one stricture in the upper portion another will usually be found lower down. In three cases in the experience of the writer more than one stricture was present, but the lower in each instance was the more dense.

How to reach strictures situated below the arch of the aorta in the thoracic esophagus by direct means has been, and is yet, a problem. Nasolloff, Quénu and Hartmann developed an operation for external esophagotomy on the cadaver, which Rehn first performed on the living subject, an incision from the fourth to the eighth rib on the right side of the spinal column being employed.

The difficulties and dangers of this plan of attack are so great that indirect measures are to be relied upon.

For this purpose two methods are available—Abbe's string-saw and Ochsner's operation; in the latter a loop of rubber tubing is used as a dilating medium. The one method supplements the other. Division of the stricture by the string-saw invented by Abbe has been performed a number of times with great success.

Through a gastrotomy wound a stout silk cord is passed in a retrograde way through the esophagus and out through the mouth or through an external esophagotomy. The stricture is made tense by engaging bougies into it from below, and by a sawing motion of the cord, the tight bands are divided, while the important soft parts are crowded back out of the way. After full dilatation has been secured the incisions can be closed, or a rubber tube is inserted to a point above the stricture and brought out of the gastric incision, the latter being united to the margins of the abdominal wound. In two or three days the tube is removed and sounding from above employed in the usual manner.

CASE 4.—*Stricture of Esophagus—Division and Dilatation After Gastrotomy and External Esophagotomy—Testimony as to the Value of Abbe's String Method of Division.*—H. W., aged 3 years, of Amboy, Minn., was admitted to St. Mary's Hospital, Rochester, Minn., on Oct. 5, 1892, with the following history, given by her mother.

One year previously the child accidentally swallowed caustic lye. For four years she was very sick, then gradually improved for several months, although totally unable to swallow solid food at any time. During the last six months she has had great difficulty in swallowing liquids, and has regurgitated from the esophagus more than half of the nourishment taken.

She is emaciated to a considerable degree. Upon being given two ounces of milk it was drunk with avidity, but was nearly all regurgitated. The dilated esophagus above the stricture holds nearly four ounces of fluids. Bougies were inserted through the pharynx into the esophagus, but were completely arrested at its lower end, while careful search of the face of the stricture with a number of whalebone bougies, under anesthesia, failed to pass the stenosed portion. At intervals of four days this search was continued, but without result. While undergoing these repeated examinations the child became much better and was able to retain a larger proportion of liquid nourishment, and improved visibly.

Proper manipulation was much interfered with by the short, sharp curve of the child's pharynx and its small size; therefore external esophagotomy was urged upon the parents to permit of more direct access to the parts involved. This was declined, and the little girl was taken home at the end of two weeks.

On July 19, 1893, the child was readmitted to the hospital. The slight improvement had been of short duration, a gradual closing of the small channel had taken place, and for the past four weeks it had been nearly, if not quite, impermeable, so that the little patient had been nourished by rectal enemata.

She was emaciated to a marked degree. As before, careful search utterly failed to pass the stricture. External esophagotomy with a hope of finding a way through the damaged esophagus did not promise the rapid relief that the child's nutrition demanded; therefore, on July 20, 1893, a gastrostomy was made after the method of Fenger, the incision being made as high up and as close to the median line as possible, to permit of retrograde dilatation.

Fenger's operation was chosen, as permitting more direct and easy access to the cardiac orifice of the stomach, in place of that of Hacker or that of Witzel, which are far superior as to the preventing of leakage from the fistula, but also present greater obstruction to intragastric manipulation. The child was now well nourished through the gastric fistula, and twice a week the lower face of the stricture, which was at the diaphragmatic opening, was carefully searched for an outlet. On two occasions the finger was introduced through the fistula into the stomach and used as a guide for the probe, the patient being anesthetized. The dilation of the fistula necessary to introduce the finger in so small a subject greatly increased the leakage through the gastric opening, and the child again began to fail, from the inability of the stomach to retain nourishment.

On Aug. 25, 1893, a left external esophagotomy, at a low point in the neck, was performed by Dr. C. H. Mayo, and a bougie introduced by him through this opening and pressed against the stricture, pushing it downward into the stomach and holding it steadily. With a finger in the stomach, careful search now enabled me to pass a long malleable German-silver probe from the stomach through the stricture and out of the esophageal fistula in the neck, and a heavy double strand of braided silk was drawn through the channel, having an end out of the opening in the esophagus and also out of the gastric fistula. The stricture was about three-quarters of an inch in length, as nearly as could be ascertained. By using one strand to cut the tissues, after the method recommended by Dr. Robert Abbe, while knots were tied on the second strand and pulled into the obstruction to keep the stricture tense, the opening was greatly enlarged. This method of Abbe's was of the greatest value, and had but one disadvantage—that of cutting the edge of the gastric fistula when drawn taut. This was in part obviated by holding the lower end of the cutting thread in the bite forceps, held on a plane with the stricture from within the stomach. Knots on the second thread, to render the stricture tense, were equally good and easier of execution than pushing bougies from below into the small opening, as recommended by Abbe.

During the succeeding month at intervals of four days, this

process of division was carried on, and perforated shot clamped upon the thread were drawn through to assist in the dilatation, as they readily followed the tortuous passage. Bougies then became permissible, inserted first from the neck and later through the mouth.

In five weeks the threads were removed and dilatation was carried on with olive-tipped whalebone bougies made for the purpose. A sister of the little patient was taught to pass the probe, and the child was discharged in two months in a good general condition and able to drink milk readily and to take chopped meat and bread with little effort. The esophageal fistula had spontaneously closed, and the gastric opening, after being touched with the cautery was nearly cicatrized. March 19, 1899, the patient is well.[4]

Ochsner's operation is performed as follows: The anterior wall of the stomach is drawn out of a left oblique incision through the abdominal coverings; a small opening is made into the stomach sufficient in size to introduce the finger. A whalebone probe, to the tip of which a silk string guide has been tied, is now passed through the esophagus either from above or retrograde, as in the Abbe method. With this guide a loop of silk is drawn out of the gastric incision in such manner as to leave the guide as a third string. Into this loop a small soft rubber drainage-tube three feet or more in length is caught in the middle; by traction on the ends of the doubled thread through the mouth, this loop of rubber tube is drawn through the stomach and made to engage in the stricture.

The greater the amount of traction the smaller the stretched rubber tube until it is sufficiently reduced in size to enter the stenosed portion; by alternating the direction of the pull the tube is drawn out by its free ends and in by the silk loop. Increasing sizes of tubes can be employed, and if necessary the third string can be used as a string saw after the Abbe plan of procedure. This operation was first successfully performed by Dr. A. J. Ochsner, of Chicago, in February, 1899. In April, 1899, I had an opportunity to employ this method, with the most satisfactory result.

CASE 5.—*Stricture of the Esophagus—Gastrostomy and Dilatation by Ochsner's Method—Recovery.*—G. H., a female, aged 9 years, of Etna, Minn., was admitted to St. Mary's Hospital, March 3, 1899, with the following history. Four months before, she accidentally swallowed concentrated lye. The ulceration produced was slow in healing and the difficulty in swallowing gradually became more pronounced. For the past month only liquids have been attempted, and the greater part has at once been regurgitated. Emaciation was extreme. On examination, a stricture in the lower esophagus was readily detected by a bougie. After considerable effort a fine whalebone probe was passed. There appeared to be two points of contraction, about an inch apart, the lower being at the diaphragmatic opening. Systematic probing during the next seven weeks did not yield much result; occasionally a larger probe could be passed, and again only the finest could be used. During this time rectal feeding was employed to supplement the very limited nourishment obtained by means of the esophagus. The little patient became so reduced that on April 20, 1899, the abdomen was opened by a left oblique incision. A fine probe armed with a silk thread was passed through the esophagus into the stomach. The thread was caught and drawn out of the incision; by this means two threads of heavy silk were drawn upward and the silk guide left in position.

A quarter-inch rubber drainage-tube was lubricated and caught by the middle in the loop; by traction from above, the tube was drawn through the stomach and into the esophagus, considerable traction being required to engage it in the strictured area. By first using traction upward on the strings and then downward on the free ends of the tube, the stricture was rapidly dilated. The dilating tube was removed and a half-inch rubber tube was introduced into the gastric opening, and through this tube the three threads were drawn, the free ends being tied to the ends projecting from the mouth.

A gastric fistula was then formed after the method of Bernays, the rubber tube being enclosed by three superimposed circular purse-string sutures of catgut, one-fourth of an inch apart, introduced in the wall of the stomach around the incision, the margin of the fistula being then sutured to the abdominal wound. This causes a cone or nipple-like projection of the wall into the lumen of the stomach, and through this tube sufficient nourishment was introduced. The general condition rapidly improved and systematic sounding was carried on as before, with increasing sizes of bougies. The patient is still under treatment.

Internal esophagotomy, first performed by Maisonneuve in 1861, has been made about twenty-five reported times (Richardson), with a death rate of over 25 per cent. Above the arch of the aorta it is unnecessary, below it is a chance shot and success a lucky accident. Koenig believes that permanent gastrostomy is preferable. Sands' instrument shares with Mackenzie's the doubtful honor of being best for the purpose. Meyer, in an interesting summing up of internal instrumental esophagotomy, says that the danger of accidental injury to important structures is not greater than the introduction of infective material without the gullet, such infections being responsible for more than half the mortality. He recommends gastrostomy for the purpose of feeding and also to allow of preliminary cleansing of the operative field, if internal instrumental esophagotomy is adopted. Internal divulsion is nearly as dangerous as the cutting operation and less effective. Fletcher's esophageal divulsor has been used a few times. Dr. S. J. Mixter has devoted a great deal of attention to this subject. He recommends that Symonds' tube as originally advocated for malignant strictures be introduced, and believes that that steady pressure will gradually increase the caliber. It would seem that a stricture of sufficient size to permit of permanent tubage could be overcome by gradual dilatation. The literature of the subject is filled with cuts of more or less ingenious instruments for the purpose of dilating these strictures: the spiral rolled tin sounds of Rosenheim, the laminary tent of Senator, and a host of others, interesting but of questionable value; of these linear electrolysis as introduced by LeFort has had the greatest reputation. The marvelous nature of the cures wrought in many cases leads one to think that the enthusiastic advocates of electricity failed to exclude the spasmodic variety with sufficient care. One hears much less of the cure of strictures in this manner than five years ago.

IMPASSABLE STRICTURES.

In a moderate number of strictures a probe can not be passed through the mouth, yet after an external esophagotomy the bougie can be manipulated to so much better advantage that the opening may be found and, after a few soundings, conducted through the fistula; the future dilatation is continued through the mouth. Graser particularly advises this in children. Kammerer reported a case before the New York Surgical Society in which, after failing to pass the stricture by retrograde sounding through a gastric incision, success followed probing from above through an external esophagotomy. Koenig had a series of fine silver balls made and threaded; one swallowed at bed-time would usually pass the stenosed area during the night and was drawn back through by the thread in the morning. Zeeheisen records two cases in which an opening passable to a sound was secured in this manner. Billroth succeeded in several cases with a cylindrical cloth bougie partly filled with mercury, the weight and adaptability of the metal carrying it through.

Gastrotomy and retrograde dilatation were recommended by Schede in 1883, and first performed by Trendelenburg. Kendall Franks collected twenty cases cured in this manner. Since that time a large number of successful cases have been recorded. Great and unexpected difficulty is often experienced in attempting

retrograde dilatation through a gastric fistula. It is a surprising fact that under such circumstances it may be next to impossible to find the cardiac opening. For this reason the dilatation should be carried out as the primary operation if possible. Richardson directs that the anterior wall of the stomach be delivered and a small transverse incision made into its cavity near the lesser curvature, in the neighborhood of the pylorus; by traction on the stomach just below this incision the lesser curvature forms a sulcus along which the instruments glide into the cardiac orifice.

Hagenback turned defeat into triumph in a case in which he was unable to find the stricture from below, and made a gastric fistula for feeding purposes. He caused the patient to swallow a small perforated shot to which a thread was attached; this passed through the stricture and was hooked out of the fistula, acting as a guide for future manipulation.

Abbe recommends that a string guide be introduced by which dilating bougies can be drawn upward retrograde, and that this guide should be retained in place until a sound can be introduced from above. Observation has shown that it is possible to pass an instrument retrograde when impassable from above, but that regular dilatation from below without a guide may prove very difficult.

Twenty-eight cases from the literature of retrograde dilatation are analyzed by George Woolsey, and the comparative merits of the various methods of cutting are clearly stated.

It may happen that the condition of the patient will not permit prolonged attempts at retrograde dilatation, and a rapid gastrostomy should be done by the Witzel or the multiple purse-string method of Bernay, as either permits immediate feeding, does not leak, and yet can be readily converted into a direct opening by a dilator when needed for later attempts at retrograde dilatation. With the improvement in nutrition which follows gastrostomy and the absolute rest to the esophagus, in a short time a probe may be passed from above.

CASE 6.—*Cicatricial Stenosis of the Esophagus—Gastrostomy—Gradual Dilatation Through the Mouth.*—V. M., aged 3 years, of Madison, S. D., was admitted to St. Mary's Hospital Rochester, Minn., July 1, 1894. Nine months previous to admission the little fellow had accidentally swallowed concentrated lye. Symptoms of esophageal obstruction becoming more and more pronounced, attempts were made to dilate the strictured gullet without success. At first solids were regurgitated, later fluids, and for six weeks nourishment had been maintained by rectal feeding.

The child is emaciated to an extreme degree and is too feeble to stand. Fluids were eagerly swallowed only to be at once regurgitated. Attempts to pass whalebone probes through the stricture were unavailing. Gastrostomy after the Witzel method was performed and immediate feeding resorted to.

Regular feeding through the gastric fistula soon improved the general condition. Systematic search for an opening through the stricture from above was made every other day for several weeks before a small whalebone probe passed. After this success the bougie failed to find the orifice a second time for a number of days. Three months of persistent effort finally developed a moderately sure passage. For five months all the feeding was carried on by the gastric fistula, a good-sized opening through the stricture having developed by this time.

On Feb. 22, 1895, the patient was discharged, being able to eat ordinary food and since that time he had been regularly sounded and had remained in excellent health, until June, 1898, when he was readmitted with complete obstruction, having three days before accidentally swallowed a mass of chewing gum which had tightly wedged in the opening; this was removed with some difficulty.

During the four years which had elapsed the same bougies were continued by his parents without taking into account the growth of the child.

Proper sized probes were obtained, and he has since remained in good condition.

There will yet remain a few cases in which a large part of the esophagus is obliterated, and permanent gastrostomy after the Frank method is the melancholy outcome.

In summing up, the following conclusions may be formulated:

1. Systematic sounding should be commenced in from two to four weeks after the swallowing of a caustic substance.
2. Should the traumatism be severe, immediate gastrostomy will lessen inflection and hasten cicatrization, sounding being carried on as before.
3. Non-dilatable strictures in the vicinity of the cricoid cartilage should be divided by external esophagotomy.
4. Stricture above the arch of the aorta may be safely cut by a combined internal and external esophagotomy.
5. Dense thoracic strictures are best dilated by Ochsner's method, and, if necessary, divided by Abbe's string saw.
6. Impassable strictures should be treated by retrograde dilatation.
7. A dilated stricture should be occasionally sounded for years, if not for life.

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Original Articles.

QUININ IN MALARIA.*

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A perusal of current literature and an experience with physicians in active practice show many differences of opinion regarding the use and value of quinin in various malarial diseases. The recent war, by exposing large numbers of men to real or imaginary malaria, brought out in a striking manner many of the most common views, and the numerous articles directly and indirectly touching the subject seem to justify a somewhat dogmatic consideration of certain salient features.

Why We Use Quinin in Malaria.—It should not be forgotten that our use of quinin is due to an accidental discovery and that the value of the drug and fairly reliable methods of administration were known long before we had any accurate knowledge of the cause of the disease or the nature of the changes produced by it in the body.

As is well known, malaria is a disease that in most cases tends naturally to recovery, so far as each attack is concerned, with a tendency, almost as strong, to relapses. It might, therefore, be considered good practice to treat the patient expectantly as many treat other self-limited diseases. Without wishing to appear as advocating such a policy in any self-limited disease, I wish to point out why we should not, as a matter of routine, in malaria.

Each malarial paroxysm does harm in certain well-known ways, and in some not so well known. Of the first it is enough to mention the destruction of red blood-corpuscles, which, even in a seemingly mild case, may be quite extensive, and in a severe paroxysm may amount

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to the loss of a fifth or more of all the blood-corpuscles in the body within less than forty-eight hours. At present we have no means of recognizing in practice whether a given attack is going to cease spontaneously or not. Rather complicated stains and considerable time spent in an examination may enable an expert to make a very accurate prediction, but such methods may lead us astray by revealing very few parasites in a specimen, suggesting the probability of a mild case, when the very next paroxysm may be very severe. So, about twelve hours after the first chill in the relapse of a malaria acquired at Santiago, in an examination lasting half an hour, I found very few organisms. Dried preparations, stained and examined carefully, later on confirmed the examination, but the next day it was easy to find parasites belonging to three distinct generations, tertian, in large numbers.

When we remember that we have a drug that will cut the attack short with almost absolute certainty, and usually with little risk to the patient, it is easy to see how the problem differs from that of treating rheumatism with salicylates, or any other acute disease by specific means, not excepting diphtheria and its antitoxin.

Choice of Preparations.—In this paper I use the term quinin in a wide sense, including all the more useful of the cinchona alkaloids. At present the quinin salts and the promising euchinin are the only ones necessary to choose from.

Dose.—One of the most unsettled problems among practitioners in general is the dose of quinin, although among those with special experience the diversity of view is not so marked. In the late war doses of quinin as large as 60 to 100 grains of the sulphate per day were frequently given in the West Indies, and even in army hospitals in this country 48 to 60 grains per day were often used. Yet the most experienced men in Africa, Italy and the East Indies rarely find it necessary to give more than 30 grains per day and usually get good results from half that dose, while 45 grains per day is the maximum of many of the most judicious physicians. In the northern half of the United States the milder intermittents are often checked by a single dose of 5 grains, more certainly with 10. In general, however, 15 grains may be looked on as an average dose in such cases. In the severe and more obstinate estivoautumnal forms 20 grains a day may be taken as the normal dose.

One Dose or Divided.—There is another point on which views differ. A consideration of the processes involved seems to prove to me that the remedy will be most effective if given in one dose. The problem is to check the growth, or to kill, if possible, the parasites. This can most reasonably be expected by bringing the greatest possible quantity of the remedy, consistent with the safety of the host, in contact with the parasites. This is the method most frequently followed by success in the case of many intestinal parasites, and the conditions in malaria would seem to be not dissimilar. In practice it is not uncommon to find patients unaffected by doses of two grains every hour, who are at once relieved of further paroxysms by a single dose of only one-half or one-third the quantity formerly taken in a day. As an intermediate method we may consider that of giving moderate doses, say 5 grains three or four times a day. This method is often successful, much oftener, I believe, than that of giving two grains every hour. Its success, I believe, depends on the fact that the single dose was large enough in the case in question, if given at the right time, to produce a distinct effect on the parasites, and there are some cases in which, owing to the condition of the patient, and his temporary or usual reaction to quinin, this method may be followed with advantage. In ordinary cases, however, where the paroxysms are distinct, the best method is that of giving the whole amount at once, or within a time not longer than two hours.

At What Time Should the Dose be Given?—From the time of Sydenham some of the most eminent physicians have given the drug in the decline of the paroxysms. This is the method recommended within recent times by such men as Baccelli, A. Plehn, Maclean, Manson, Ziemann, and many East Indian physicians. On the other hand there is a tendency at present to give quinin with reference to the expected paroxysm. This practice is perhaps largely due to the influence of Golgi, whose authority in matters malarial is deservedly great. The subject has always been more or less affected by speculation. Sydenham thought that if he gave "the bark just before the fit," he would "check the method by which nature would get rid of the febrile matter." The explanation advanced in favor of the other plan is that by giving the drug several hours before the paroxysm, the parasites just set free would be taken in their most susceptible stage.

The matter seems one that should be settled rather by experiment that by a priori reasoning. This was indeed the method followed by Golgi,[1] but it has always seemed to me that his observations do not bear the conclusions he and others drew from them. He showed that quinin given in the stage of segmentation prevents the growth of the young forms. He claimed that the action of the drug was less certain when the parasites were in the endoglobular stage, and asserted that although given in this stage the paroxysms were often checked, especially in tertian fever, yet there was greater risk of relapses than when the drug was given before the paroxysm. Golgi's observations were made for the most part on quartan fevers, of mild type. In tertian fevers he found that the paroxysms could be checked by giving the drug in the apyrexia, when the parasites were in the endoglobular stage, and he had to suppose that in tertian fever the red blood-corpuscles offer less difficulty to the entrance of quinin than they do in quartans, a supposition that seems rather gratuitous. Golgi, of course, did not aim at aborting the oncoming paroxysm by giving the remedy several hours before. He thought that by so doing he had the greatest certainty of preventing the next paroxysm. Baccelli[2] made some careful experiments with reference to the most favorable time for giving quinin, using intravenous injections. He found that quinin given at the beginning of the febrile attack, or three hours earlier, did not abort the paroxysm, and that given in the acme, the crisis was not hastened. If given at the decline or end of the paroxysm, it either prevented the next one or rendered it milder. He therefore recommended the decline as the best time for giving the drug, especially in subcontinued fevers.

I had been making observations for two years on the effect of quinin given at different times, when Baccelli's article appeared, and immediately began to give the remedy in the decline. The results were more certain and more satisfactory in every respect than by other methods, so that I have followed it with rare exceptions. In some cases I have given the remedy from three to five hours before the paroxysm. I have also had opportunities for seeing cases treated in the latter way, or at various other times, by colleagues. A number of medical acquaintances have taken up the Sydenham plan, and among these Dr. F. H. Williams[3] has published some in-

structive histories, with charts. The real and apparent contradictions between the Sydenham and Golgi methods are well worthy of careful control-observations in which the conditions of the parasites and the temperature and other symptoms, and the administration, absorption and excretion of quinin go hand in hand. As an example the following may be given:

H. G. acquired malaria in Santiago in July, 1898. He was admitted to my clinic, December 31, having had a chill about 11 a. m. The last chill prior to this was two weeks before. For several days before admission there was pain in the back. Just after the chill the blood showed a few half-grown endoglobular bodies, and very few larger ones. In dried and stained preparations the latter showed numerous small vacuoles and in general stained badly. At 8 p. m. there were only a few endoglobular forms, larger than at noon. Many of these were in many small round masses, connected by narrow filaments, suggesting degeneration. No medicine had been taken and none was given.

January 1, at 9:30 a. m., there were many parasites in the blood, one or two in every field—oil-immersion. These were about equally divided between half-grown and almost mature bodies, indicating a double (tertian) infection with paroxysm imminent. The larger forms disappeared without showing segmenting bodies, between this and 12 m., and the temperature rose—between 12 and 1:30; 99.5 degrees and a chill at the latter—reaching 104.5 degrees at 3 p. m. The chill lasted an hour. The temperature began to fall at 4 p. m.; at 4:45 sweating began and continued until 6.

At noon the smallest ameboid forms began to appear in the red corpuscles, and by 4 p. m. it was clear that the endoglobular forms seen before really belonged to two distinct sets, one then about half grown, the other almost mature. The latter were too numerous as well as too far from the stage of segmentation to permit the conclusion that they were belated bodies from the paroxysm in progress, so that a triple tertian was diagnosed. During the chill and fever the patient was given codein in spirit of mindererus, and lemonade.

At 6:45 p. m., the temperature having fallen to 101.6, 5 grains of quinin hydrochlorate were given in solution, and repeated at 7:15 and 7:45. By the time the last was taken the ears were ringing.

The urine was collected every half hour from 6:45 p. m. and quinin tests (bromin) made in the ethereal extract by my assistant, Mr. S. R. Boyce, Ph. C., who devoted much skill and care to the work. Fluorescence appeared half an hour after the first dose, the blue color half an hour after that, and the thalleioquin reaction was most intense from that time up to 8:45 p. m.

At 9 p. m. the temperature rose without a chill to 103.8 degrees and fell from 12 midnight to 9 a. m., reaching 101 degrees. It again rose, reaching 103.8 degrees at 11:30 a. m. At 11:45 there was a chill, lasting 45 minutes. Sweating began at 4.

In the morning the blood showed only large endoglobular bodies, with one flagellate. At 12 noon a few unpigmented ameboid bodies appeared in the red blood-corpuscles. There was, therefore, only one generation left.

At 1 and 1:30 p. m. five grains of quinin were given in solution as before; at 1:45 the patient vomited. As the temperature record shows, the medicine was given too early. The decline of the fever was not positively in progress. Tests of the urine at 1:45 and 2:30 made it probable that some quinin was absorbed, since the reaction became more intense after the second dose. At 7, 7:30 and 8 p. m. the medicine was again taken and the urine examined as before. All traces of the former doses had disappeared. In half an hour after the first dose the reaction was present; marked in an hour, and for two hours after that. It was weak after twelve hours, but visible up to nineteen hours. The parasites were therefore brought in contact with the drug not less than about eight hours after segmentation. They failed to develop, and the patient remained free from paroxysms after 30 grains of quinin retained and 10 partly absorbed, no more being given for seven days.

The case illustrates the rapid absorption of quinin. We did not have an opportunity of making observations on the time of absorption when given before the paroxysm, but two observations on prophylactic doses in the same patient, seven and fourteen days after the last chill, showed slower absorption and more persistent final reactions.

It has been thought by some that Professor Koch has come out as an advocate of the Golgi method in African fevers, which are etiologically the same as our summer and autumn malaria. The matter is only apparent. Koch claimed that in these fevers the quinin must be given at the time when the parasites are in the large stage. In the cases whose charts are published this corresponds to the later part of the decline, and from six to eight hours before the rise of temperature in the next paroxysm.

There are some practical facts bearing on this question that are not introduced into the discussion as much as they deserve. It is often forgotten that the chill does not always occupy the same place in the temperature curve, but comes anywhere from the beginning to the end of the rise, or even later. Since the chill is often taken as the guide to the time of the paroxysm, the difference may render illusory the time limit of three to five hours given by Golgi. Many of Golgi's followers have lengthened the time to eight hours, thus going back to a period at which Golgi claimed the results are likely to be poor. Directions based on the chill are especially faulty in the severer fevers, because there may be no chill.

The real condition of the development of the parasites can only be discovered by the microscope, but such observations may take a great deal of time, and, except in the case of an expert with plenty of time, may be misleading. Even in such a case, the ripening of the parasites in successive individuals extends over so long a time as to throw difficulty about a strict following of Golgi's rule. In tropical cases, such as occur in many parts of the United States, the generations are often very much confused, and the disease is rarely so simple and typical as Koch assumed from his first observations in Africa. Prolonged examinations of the blood are essential for those who wish to study the therapeutics of malaria, but in practice we can hardly ask more than that the microscopic diagnosis be made, with as close an approximation to the stage of development, the forms of the parasites and the condition of the blood as the exigencies permit.

The Golgi method involves two risks which, though usually trifling, can be avoided by the Sydenham plan. The first is that a patient seen in a primary paroxysm may anticipate a tertian fever, and, while waiting for the five hours' time, be taken with the paroxysm of a double infection. Had he taken his medicine in the beginning at least one, perhaps two, fits might have been prevented.

In the second place, the last dose ordered five hours

before the expected paroxysm is often useless, since the parasites are gone. This can be discovered by the microscope. As Williams has well remarked, the method advocated saves quinin.

That absorption from the stomach is less certain and prompt in the time just before the paroxysm, and in the onset, is widely believed, and I think it is true. It is also widely believed that the symptoms of cinchonism are more marked if the effects of the drug appear in the early part of the fever. I think this is also true, though the point is difficult to demonstrate.

A careful consideration of all the data led me to the following conclusions:

In a tertian or quartan intermittent, or any combination or duplication of these, quinin should be given in the decline of the paroxysm if possible; or not later than at the end of the apyrexia. The difference depends on the time the patient is seen or the diagnosis made. The dose should be given at one time, or in parts at short intervals, in such a form that absorption may be confidently expected. I have found it very satisfactory to give the full dose in the form of the hydrochlorate, in capsules, followed by 15 drops of dilute hydrochloric acid. In patients who have been unable to retain other preparations, I have been successful by giving three five-grain capsules half an hour apart, with a small dose of dilute hydrochloric acid after each, with directions to repeat in half an hour if any dose was vomited.

In an ordinary single infection, when the drug is given in the decline, there will not be another paroxysm. In double infections there may be another paroxysm, often milder than the preceding. If there is a rise of temperature of more than a degree, or if the blood shows parasites, a second dose should be given, also in the decline, and if necessary even a third or more. Few cases require more than three. After the temperature falls no quinin need be given for the specific effect, and if it be used as a tonic not more than two grains three times a day should be taken. Other remedies may be used as indicated, the indication for iron being controlled if possible by an expert examination of the blood besides that of the patient in general.

The evidence of the decline of the temperature is best based on the thermometer, used every hour after the chill, but in case the characteristic profuse sweating occurs, it is a sufficiently accurate guide, and the great changes in the body following sweating probably assist in the absorption of the drug.

In the remittent or estivoautumnal fevers, the intervals are not so clearly defined as in the tertian and quartan infections. If they are, the decline of the fever can be recognized by careful use of the thermometer, or by the improvement in the subjective sensations. Very often in these cases the parasites become mature at times varying widely, so that not only is the curve difficult to interpret but the parasites are not equally influenced by the remedy. Very often, too, the symptoms are so alarming or the number of germs found in the blood so large that immediate treatment seems necessary. In such cases the quinin should be given in doses of five to ten grains, according to the severity of the case, at intervals of four to six hours, until a marked remission occurs, and then the daily intermittent dose be given until the fever disappears, or, better, until the condition of the blood shows that quinin is not indicated.

Relapses.—The treatment of the relapses of malaria is a matter of importance. Except in mild cases, a return is to be expected and guarded against. This is a fact long known but apparently often forgotten. Patients are often aggrieved to find that the "dead-sure" prescriptions of their doctors —usually polpharmaceutic marvels—have not stopped their chills for all time, as they were led to expect.

The relapse often takes place on the seventh day or some multiple of it, either fourteen or twenty-one days, or later. In severe infections, it often comes earlier and in the relapse of Cuban fevers the fifth day or the fourth after the last fit may see the return of a paroxysm. The cause of the relapse is not difficult to explain. The parasites are scotched, not killed, and only reach sufficient numbers to cause another paroxysm after a lapse of time. They can be found, by careful search, before the day of the paroxysm, and they sometimes cause slight elevation of the temperature in the days preceding the relapse. Golgi's claim that relapses are less frequent in cases treated according to his plan than if the drug is given in the decline must have many exceptions. It is therefore advisable to give quinin at intervals after the paroxysms have stopped, even if his method is used. The interval in ordinary tertians should be seven days, in more severe cases five days. In this way we not only lessen the danger of relapses, but we also cause a discontinuous or intermittent sterilization of the blood and hasten the complete recovery of the patient.

Prophylaxis.—The study of relapses throws light on the prophylactic treatment of malaria. Up to the present time no unanimity has been reached regarding the prophylactic use of quinin. We still find that daily doses, both large and small, are in use, usually without securing the desired end, and rarely failing to be more or less deleterious to the stomach. It appears, however, that the discontinuous method is gaining ground. A. Plehn modified the method of F. Plehn by giving the medicament every five days instead of every week, and in severe malarial localities this is certainly advisable, on account of the shorter time necessary for the development of an attack in such places. According to his latest statement, F. Plehn prefers to give from one-half to one gram of quinin every week for five or six weeks, then to gradually lessen the dose and lengthen the interval, and to use similar doses after unusual exposure or other probable assisting causes, as necessary. The fact that this has been recommended by Professor Koch[4] will no doubt go far toward extending the use of Plehn's method.

Malarial Hemoglobinuria.—One of the most important subjects at present before the profession is that including the so-called malarial hemoglobinurias and quinin hemoglobinurias. These question are important from the practical standpoint in many parts of the world, though it is probable that the problem is one that really varies in its essential nature in different parts. As examples of the conditions in the eastern hemisphere, we can take the contradictory statements of Koch, the Plehns, Doering and others on the theory and practice of the disease.

Koch was inclined to think, after his first investigations, that the so-called black-water fever of Africa, called by many malarial hemoglobinuria, is a quinin poisoning due to an idiosyncrasy.

Doering[5] has a report in the same volume in which Koch published his report, in which he considers this subject in detail. His experience with malaria has evidently been more extensive than Professor Koch's. Whether he is as trustworthy I do not know. Doering calls blackwater fever "malaria hemiglobinurica." He declares the immediate cause to be quinin in combination with active malarial parasites. In some cases quinin causes the hemoglobinuria in persons whose blood has

been altered by the tropical life, but he has also seen simple malaria, untreated by quinin, pass into blackwater fever. Doering avoids the use of quinin during the existence of blackwater fever, but looks on the use of Plehn's method of prophylaxis as the most certain method for its prevention. While Plehn and Doering avoid the use of quinin, many other African physicians, German and English, use it, seeing no bad effects, but obtaining good ones.

It seems hardly satisfactory to ascribe the results of quinin, reported by so many physicians in different parts of the world, to an idiosyncrasy. The geographical distribution of the cases seems to oppose such a view. That quinin may cause breaking down of red blood-corpuscles in those whose blood is already impoverished by malaria, with or without other depressing factors, may easily be admitted. Even if we admit this, however, the question why this occurs in East Africa and not in Algiers, in Arkansas and not in Italy, is not answered. The germs appear to be the same. A further consideration of this would lead us too far from the present subject.

Hemoglobinuria (and Hematuria) and Malaria in the U. S.—From the titles in medical journals one might suppose malarial hemoglobinuria or hematuria very common in this country. Yet a careful study of the literature gives very little valid evidence that such is the case. Proof of malaria, the finding of the characteristic parasites in the blood, is rarely forthcoming in the works of those who claim the disease is malarial at the time of the hematuria. It is generally conceded that microscopic evidence must be submitted before a discussion of even so simple a process as intermittent malarial fever can be profitably carried on. How much more necessary then is such evidence in a condition like hemoglobinuria. In fact, in the current reports even the ordinary clinical features are not always as clearly presented as one might wish, and in discussions of the pathology the more recent additions to our knowledge are often conspicuous by their absence. One finds the work of Bérenger Féraud quoted more frequently than Bastianelli, while the important observations of the Plehns, Doering and other recent writers seem almost wholly neglected. It is a suggestive fact that, while in Africa the malarial blackwater fever is a hemoglobinuria, in the United States the condition is almost invariably hematuric. In some parts of the country all hematurias are called malarial, just as all neuralgias, all fevers, and many other symptoms are so called. Yet in the South, besides the ordinary hematurias, there is the possibility of numerous cases due to other parasites, neglected as completely in diagnosis as those of Laveran. In some of these districts the patients with hematuria from any cause may easily have a history of past or present malarial infection. This may have an important bearing on the treatment, but does not necessarily entitle the disease the predicate malarial. The profitable inquiry as to the possible relation of past attacks of malaria to the hemoglobinuria, and the careful study of the blood, have been even more neglected than the search for active infection.

The positive study of the so-called malarial hematurias has just begun, and, as was to be expected, statements differ, just as we may readily understand the facts may differ in various cases.

Pending a conclusion, the first thing to do after taking charge of a case of suspected malarial hematuria is to ascertain the possibility of malarial origin or influence, by the history and by exclusion of other possible causes. This is obviously not an easy thing to do. Even outside of malarial regions we find numerous cases of hematuria and hemoglobinuria, the causes of which are difficult, or sometimes even impossible, to discover within a time useful for etiologic treatment.

More important still, and fortunately easier, is it to discover the presence or absence of malaria at the time. Here the blood examination is all-important, and it cannot be denied, impossible as the thing seems, that ability to make the necessary examinations should be expected of those who practice in malarial localities. I say it seems impossible because it is a fact that other similar knowledge, much longer available, is not as generally applied as it should be. One has only to mention examinations of the urine and sputum.

Taking for granted that the precise conditions have been made out by a complete examination, the question remains: What is to be done? I must limit myself to the use of quinin.

If there is no evidence of active malaria, no matter how much there may have been, quinin is not to be used. This truth is still far from being generally accepted. There is still a belief, difficult to eradicate, that quinin has some mysterious properties in all things called malarial. Yet so far as we know, quinin cannot stop the breaking down of red blood-corpuscles, nor the exit of red cells through the kidneys. True it may act as a tonic, in small doses, but there are other drugs, if necessary, just as useful for that purpose.

It would perhaps be safe to lay down the rule that, in a hematuria the malarial nature of which is not known but only a matter of conjecture, quinin in more than small doses will probably do more harm than good.

If there is a malarial infection with active parasites shall quinin be used? Around this question discussion has been more than warm. Both theory and practice have been called in to solve the problem, but the answer seems more remote than ever. A number of facts should be borne in mind. Quinin is often more or less irritating to the urinary tract. It may therefore, especially in large doses, aggravate a local disease of the kidney—malarial in origin—and cause or increase hematuria. In chronic malarias, with active parasites still present, there may be a large number of young and vulnerable red blood-corpuscles. They may be broken down by the circulating quinin and hemoglobinemia and hemoglobinuria result. This is possible, but whether it occurs, or will occur, in any given case has not been proved and can hardly be positively predicted. In the cases in which quinin is said to have done harm the material element has not been demonstrated. On the other hand some of the most capable Southern clinicians deny such an occurrence, and Woldert, who appears to be the only one who has had experience with the microscopic diagnosis in the South, agrees with them. Curiously enough, many who fear to use quinin in such cases use drugs apparently as dangerous, especially turpentin, and claim to get good results.

Even if the quinin can cause or increase hemoglobinuria, it is not logical to give it up without further consideration. Without the quinin a destruction of blood is likely to occur that is often greater than any hitherto attributed to quinin. The development of each parasite breaks up a red blood-corpuscle, if not completely, at least so much so that it must speedily be entirely broken up in the body. This development of parasites may continue a number of days, unless checked by quinin. In some cases it has been noticed by African observers that the hemoglobinuria seems to coincide with the disappearance of the parasites, but this cannot safely be assumed except by the aid of the microscope. Viewed in this way quinin in malarial hematuria may be compared with an operation for the cure of a dangerous disease—

the anesthesia may be fatal. Or, just as quinin may cause so much breaking down of blood that the kidneys cannot functionate properly, so may the anesthetic seriously affect the heart or kidneys, or give rise to pneumonia.

To sum up, the question of quinin in malarial hemoglobinuria must be settled by careful clinical observation and experiment, and statements regarding it must be given credit in proportion to the accuracy with which the observations are made. In the meantime, quinin can be used cautiously, if parasites are present, giving the drug in a form most likely to be absorbed, in doses within the limit of ordinary safety, and stopping its administration as early as the microscope shows this to be proper. A temporary increase in the severity of the symptoms should not alarm the physician. It is not necessarily due to the drug. At the same time that the specific is being given, other methods of treatment must not be forgotten. The quinin is given to check the malaria, not for any particular symptom or complication.

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QUININ IN MALARIA.

THE UNSATISFACTORY RESULTS OF ITS HYPODERMIC ADMINISTRATION.*

BY G. A. FACKLER, M.D.

CINCINNATI.

The application of medical knowledge is most gratifying when it results in accuracy of diagnosis and treatment. In the consideration of malaria we certainly have an opportunity to indulge in such gratification. The clinical picture, supplemented by manifestations on the part of the blood as presented by microscopic examination, furnishes the data for accurate diagnosis. The efficacy of quinin as a curative agent in the treatment of malaria has placed it among the small list of specific remedies. The comparative ease with which we can now diagnose a case of malaria and the confidence with which we can predict its defeat by quinin leaves only the consideration of the best and most reliable method of its administration.

Prior to the summer of 1898 I had occasionally resorted to the hypodermic administration of quinin in the treatment of malaria, but lack of brilliant results failed to stimulate me to the general adoption of this plan. The encouraging reports casually offered by some army surgeons who had resorted to the subcutaneous use of the drug in malarial patients of the Southern camps induced me to employ it in a series of cases which came under observation in the Cincinnati Hospital in the summer and fall of last year. Herewith, then, are offered the clinical facts elicited by a review of twenty cases, confirming the cursory previous observations made as to the unreliableness of quinin administered hypodermically in malaria. Refraining from a complete report of these cases such as would render them proper for publication, I submit an abridged statement of the salient features thereof, adapted to the time limit and your patience. The cases may readily be assigned to one of three classes: Three to the first class, successfully treated by hypodermic injection of quinin; 7 to the second class, successfully treated by quinin administered by the mouth; 10 to the third class, treated ineffectually by quinin hypodermically, but effectually by substitution of quinin by the mouth.

Classes 1 and 2 may be offered in sums total, Class 3 will be treated with sufficient detail to bring out the points that exemplify the object of this report in the most striking manner.

CLASS I.

Cases 1 and 2 were patients presenting all symptoms of double tertian fever, Case 3 a patient with a history of irregular chills and fever for three weeks, and blood examination disclosing numerous crescents and ovoids—a total picture of an estivoautumnal type of malarial infection. In these three cases quinin bisulphate, gr. xv administered hypodermically twice daily, controlled the paroxysms within thirty-six hours, and, continued in gradually decreasing doses for a week, prevented a return.

CLASS II.

Cases 4 to 10, inclusive, were readily diagnosticated as double tertian. In all these cases the daily administration of gr. xx to xxx of quinin bisulphate, usually in morning and evening doses, controlled the paroxysms within twenty-four to forty-eight hours. In none did the daily temperature attain a height above 100 after twenty-four hours of quinin treatment and in none did the temperature rise above normal after seventy-two hours.

CLASS III.

Case 11.—James Scott, admitted Aug. 19, 1898, had paroxysms of chills and fever daily since August 15.

Aug. 19. At 1:50 p.m., temp. 105. Intracorpsucular pigmented and non-pigmented plasmodia found in large numbers.

Aug. 20. At 9 a.m., temp. 98.4; quinin, gr. x hypodermically; at 12 m., chill for twenty minutes; at 1 p.m., temp. 105.6.

Aug. 21. At 6 a.m., temp. 98.8; quinin bisulph., gr. x, at 9 a.m. hypodermically; at 12 m., temp. 105.8, preceded by chill at 11:20 a.m., quin. bisulph., gr. x, at 9 p.m. hypodermically.

Aug. 22. At 6 a.m., temp. 99; quinin bisulph., gr. x, at 9 a.m. hypodermically; 12 m., temp. 104.6, after chill; quinin bisulph., gr. x, hypodermically at 9 p.m.

Aug. 23. At 6 a.m., temp. 99; quinin bisulph., by the mouth, 9 a.m.; 12m., temp. 102.2; quinin bisulph. by mouth at 6 p.m.

Aug. 24. At 9 a.m. and 6 p.m., quinin bisulph. by mouth, gr. x; temp. not over 99, normal throughout succeeding three days during which this treatment continued.

Case 12.—Harry Carr, admitted August 19, had been ill for six weeks, with irregular attacks of fever daily. His daily lowest temperature was about 12 m. varying from 98.2 to 98.8, rising with occasional chill.

Aug. 19. Temp. rose to 103.4 at 6 p.m.

Aug. 20. Temp. rose to 101.2 at 6 p.m.; quinin bisulph., gr. x, hypodermically at 8 p.m.

Aug. 21. Temp. 102 at 5 p.m.; quinin bisulph., gr. x, hypodermically at 5 p.m.

Aug. 22. Temp. 102.6 at 5 p.m.

Aug. 23. Temp. 102.6 at 5 p.m.

At 6 p.m., Aug. 23, and at 9 a.m. and 6 p.m., Aug. 24, quinin bisulph., was administered by mouth. As a result, the temperature never rose above 99. Treatment continued for three days.

Case 13.—George Wilson, admitted Aug. 20, had quotidian chill and fever during the preceding two weeks.

Aug. 20. Intracorpuscular pigmented and a few hyaline plasmodia. Lowest daily temperature, between 6 and 9 a.m., from 98 to 98.6.

Aug. 21. Highest point reached was 102.2, at 6 p.m.

Aug. 22. Quinin bisulph., gr. x, hypodermically at 10 a.m.; temp. rose to 104.6 at 6 p.m.

Aug. 23. Quinin bisulph., gr. xv, hypodermically at 12m.; temp. rose to 104.6 at 6 p.m.

Aug. 24. Quinin bisulph., gr. xv, hypodermically at 12m.; temp. rose to 104.2 at 5 p.m.

Aug. 25. Quinin bisulph., gr. xv, by mouth at 12 m.; temp. rose to 101 at 3 p.m.

Thereafter quinin was administered at 6 a.m. and 6 p.m., in doses of gr. xv, and temperature normal.

Case 14.—Armstrong, admitted Aug. 29, had been ill for six weeks prior to admission. During the first three weeks he had chills and fever on alternate days, and thereafter quotidian paroxysms.

Aug. 29. Found intracorpuscular pigmented hematozoa occupying nearly the whole of the corpuscle. Lowest daily temperature at about 6 a.m., varying from 97.6 to 98.2. Highest point reached was 101, at 4 p.m.

* Presented to the Section on Practice of Medicine, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

Aug. 30. Quinin bisulph., gr. x, hypodermically at 10:30 a.m.; temp. 104.4 at 12 m.

Aug. 31. Quinin bisulph., gr. x, hypodermically at 9 a.m.; temp. 105 at 12 m.

Sept. 1. Quinin bisulph., gr. x, hypodermically at 9 a.m.; temp. 98.4 at 12 m.

Sept. 2. Quinin bisulph., gr. x, hypodermically at 9 a.m.; temp. 105 at 3 p.m., and repeated the dose at 9 p.m.

Sept. 3. Quinin bisulph., gr. x, hypodermically at 9 a.m.; temp. 103 at 9 p.m. Repeated the dose at 9 p.m., and thereafter at 9 a.m. and 9 p.m.; quinin bisulph., gr. xv, by mouth, brought and held temperature at normal.

Case 15.—Chas. Stahl was admitted Sept. 16, with history of irregular attacks of chills and fever during preceding two weeks. Blood examinations were negative until Sept. 19, p.m., when large flagellate plasmodia were found. From Sept. 16 to Sept. 20, temp. varied from 98 to highest between 6 and 9 p.m.—from 104 to 105.4.

Sept. 20. At 9 a.m. and 9 p.m., quinin bisulph., gr. xv, hypodermically; temp. 9 p.m. 104.

Sept. 21. At 9 a.m. and 9 p.m., quinin bisulph., gr. xv, hypodermicaly; temp. 9 p.m. 104.

Sept. 22. At 9 a.m. and 9 p.m., quinin bisulph., gr. xv, by mouth; temp. 99.8 at 6 p.m.

Sept. 23. Treatment continued with temperature normal.

Case 16.—Albert Miers, admitted Sept 16, had onset of present illness the day before admission with chill and fever; lowest daily temperature between 3 and 9 a.m., varying from 98 to 99. Highest temperature Sept 17, at 12 p.m., 103.8; Sept. 18, at 12 p.m., 103.6; Sept. 19, at 12 p.m., 102.2. Blood examination showed intracorpuscular bodies.

Sept. 20. Quinin bisulph., gr. x, hypodermically, at 9 a.m. and 6 p.m.; temp. 102 at 9 p.m.

Sept. 21. Quinin bisulph., gr. x, hypodermically, at 9 a.m. and 6 p.m.; temp. 102.2, 9 p.m.

Thereafter quinin by mouth, gr. x, twice daily, with total subsidence of symptoms; no elevation of temperature over 99.2.

Case 17.—H. Herberg, admitted Sept. 19, with history of chills and fever daily for several weeks. Sept. 20, blood examination showed intracorpuscular pigmented bodies; lowest daily temperature between 3 and 6 a.m. varying from 97.4 to 98.

Sept. 20. Highest point attained 105, at 12 m.

Sept. 21. Quinin bisulph., gr. xv, at 9 a.m.; temp. to 104.4 at 1 p.m.

Sept. 22. Quinin bisulph., gr. xv, at 9 a.m. and 6 p.m.; temp. to 105.4 at 12 m.

Sept. 23. Quinin bisulph., gr. xv, at 9 a.m.; temp. to 104 at 12 m.

Sept. 23. At 6 p.m. and Sept. 24 at 9 a.m., quinin bisulph., gr. xv, by mouth; temp. to 100.2 at 9 p.m.

The same treatment continued resulted in elevation of temperature Sept. 25, to 100 at 6 p.m.; thereafter normal.

Case 18.—Jacob Jauch, admitted Sept. 19, with history of chills and fever for two days preceding admission. Sept. 19, small hyaline intracorpuscular bodies found; lowest daily temperature at about 6 a.m., varying from 100 to 102.

Sept. 19. Highest temperature at 3 p.m., 106.

Sept. 20. Highest temperature at 9 p.m., 106. Quinin bisulph., gr., xv, hypodermically at 9 p.m.

Sept. 21, 22, 23. Quinin bisulph., gr. xv, hypodermically, twice daily; temp. rising with chill each day between 3 and 6 p.m., to 104.8 to 105.5.

Sept. 24. Resorted to administration of same doses of quinin by mouth, morning and evening, and continued this method with following result.

Highest temp. on Sept. 24, 103; Sept. 25, 101; Sept. 26, 99; thereafter normal.

Case 19.—Schwenk, admitted Sept. 21, had chills and fever daily for about two weeks. On day of admission numerous pigmented and nonpigmented intracorpuscular bodies were found; lowest daily temperature at 3 to 6 a.m., from 97.8 to 98.2.

Sept. 21. Temp. at 3 p.m., 105; quinin., gr. xv, hypodermically, at 6 p.m.

Sept. 22. Quinin, gr. xv, hypodermically at 9 a.m and 6 p.m.; temp. at 3 p.m., 104.6.

Sept. 23. Quinin, gr. xv, hypodermically at 9 a.m. and 6 p.m.; temp. at 3 p.m., 104.

Sept. 24. Quinin, gr. xv, hypodermically at 9 a.m.; temp. at 3 p.m. 102.6; quinin by mouth at 6 p.m., and thereafter at 9 a.m. and 6 p.m., with abeyance of all symptoms on Sept. 25.

Case 20.—Selcer, admitted Sept. 21, onset of illness indefinite.

Sept. 22. Numerous crescents and ovoids and some hyaline intracorpuscular bodies were found; estivoautumnal; lowest daily temperature at about 6 a.m., about 99.

Sept. 21. Temp. to 103 at 12 p.m.

Despite hypodermic administration of quinin bisulph., gr. xv, at 9 a.m. and 6 p.m. on Sept. 22, 23, 24, temp. rose to 103 to 104.2 between 9 and 12 p.m.

Sept. 25. Order was changed to quinin by mouth, in same dose and at same interval. Temp. highest Sept. 25 at 9 p.m., 99.4, and thereafter normal.

A general résumé of the 20 cases furnishes the following data: In 3 cases quinin hypodermically was successful; in 10 cases quinin was not successful; in 7 cases quinin by the mouth was successful; in 10 cases quinin by the mouth was successful after hypodermic administration had failed—a total of 17 cases in which quinin by mouth was successful as a curative measure in the treatment of malaria. In only 3 out of 13 cases, in which the remedy was introduced subcutaneously was an abeyance of symptoms secured. This experience was certainly at variance with that reported casually by some of our army surgeons.

It is but natural that we should seek for a rational explanation of this fiasco of hypodermic medication. We were assured of the correctness of the diagnoses, for no cases were designated as malarial unless the blood examinations furnished evidence which would warrant the diagnosis. All compounds of quinin, or better said, all salts of the alkaloid, have a toxic effect upon the malarial organism, and hence a curative action when administered in malarial diseases. The failure cannot be attributed to the compound employed, per se. The beneficial effect of the same preparation from the same stock when given by the mouth dispelled all doubt as to the therapeutic power of that compound. The procedure adopted for injection and the site selected were in perfect accord with the plan followed by most clinicians and observers. Where then was the defect in the inherent curative value of the method? The therapeutic failure of any remedy can not be ascribed to it essentially unless positive evidence of its absorption is furnished. It was a noticeable observation in all of our cases in which hypodermic medication was resorted to that after the majority of injections, the patients complained of pain in the region implicated by the injection. In some instances a distinct deep-seated hardness of tissue persisted for days after the treatment. It is a conjecture, in all probability bordering upon a certainty, that the solution, while dilute, as it must be with the use of the bisulphate, causes decided irritation of the tissues with which it comes in contact. The resultant localized disturbance of the circulatory conditions of the parts involved interferes with the absorptive power of the area and thus the remedy creates a bar to its own absorption.

If the observations thus submitted to you are indicative of the general experience among a larger number of cases with the same or other compounds of quinin we are forced to the assumption that the hypodermic use of quinin in malaria is never indicated except in cases in which stomach and bowels reject the dose ingested or injected. Unless my observations and deductions are erroneous, because of the uncertain action of the hypodermic injection of quinin, its administration by the mouth should be adopted in all cases.

DISCUSSION ON PAPERS OF DRS. DOCK AND FACKLER.

DR. CHARLES G. STOCKTON of Buffalo.—It seems to me the papers are most timely. For some time there has been growing confusion as to the exact place of quinin in the treatment of malaria. Now, in the matter of the time for the administration of quinin by the mouth, as suggested by Dr. Dock, I beg to take exception. There should be no rule of time for all individuals alike; it requires a study of each individual case to determine at what particular time the drug will affect the plasmodium. It depends too upon the primary digestion of individuals. In some instances the effect of the drug is ex-

ereised in the course of an hour. Dolge's method of giving quinin previous to the paroxysm has not met with the expected success.

Cinchonism is found to be more intense if the quinin shows an effect, and yet the paroxysm still comes on. Quinin is said to be difficult of administration; all will not agree with the writer: it is easy of administration. I question the hypodermic use of quinin mentioned by Dr. Fackler; I have had experience during the past year and I have come to the same conclusion that he has reached. In one case there was failure to relieve the paroxysm by hypodermic use of the drug, but the patient was relieved by the administration of the drug by the mouth. In that case, as well as in two others, there happened troublesome abscesses at the seats of injection, which was something I had never seen before. The local irritation probably accounted for the slow absorption of the quinin and the non-relief of the symptoms.

DR. JUDSON DALAND of Philadelphia.—I wish to express my pleasure in hearing the paper and wish to speak in regard to two points. So far as the use of quinin is concerned, my experience has taught me that two things are to be considered —does malaria exist, and is quinin absorbed? Exclusive of hospitals, experience teaches that less than half the cases diagnosed as malarial are truly malarial. I am speaking of the cases that come in the ordinary course of practice, and not the cases that come under close observation in hospitals. I was especially pleased with the statements made in reference to the quantity of quinin to be employed, and also as to the time it should be administered. Personally, I am distinctly of the opinion that the bichlorid of quinin is the preferable salt, on account of its solubility and the fact that the solution is reliable. So far as the dose is concerned, I agree with the statements made by Dr. Dock. As to the time of giving the dose it seems to me that one particular point should be considered, i. e., the time in the life cycle of the plasmodium when it is most susceptible to the action of quinin. In other words, I am inclined to the opinion that the time for giving the quinin is soon after the violence of the paroxysm has passed over. This corresponds to the time that there is a maximum quantity of free ameboid bodies in the blood. It is highly probable that when the malarial parasite enters the red blood-cells, quinin circulated in solution in the plasma could not exert its effects so completely as when the parasite is free in the blood. This particular time accords well with the observations of Dr. Stockton and I am sure that benefit is to be obtained from a preliminary course of calomel. After the paroxysm there is an increase in the absorption of the cinchona salt. It is interesting to know that non-absorption of quinin is a common occurrence.

While observing a case of ordinary tertian intermittent fever the hematokrit showed a loss of 10 per cent. of red blood-cells as the result of a single paroxysm of chill, fever and remission.

Hemoglobinuria is a rare occurrence. I recollect one specimen sent me from Louisiana. Hemoglobin alone was present, but upon examining the sediment, a few shells of red blood-corpuscles could be seen. I also recollect another case in which the albuminuria increased during each succeeding paroxysm of the attack.

DR. F. S. JOHNSON of Chicago.—The absorption of quinin is very uncertain. It is impossible to treat in any other way than by hypodermic injection or by inunction and be sure of your results. I will relate one case as an illustration of this. A man who had been very strong and who became extremely weak, was given quinin by the mouth without effect. Hypodermic injections of large doses of quinin were given, 40 to 60 grains by deep injection, and soon the malaria subsided and the patient got well. He was so weak at the time that it was impossible for him to rise from the bed. The hypodermic injection was made by deep puncture. Quinin given subcutaneously may cause sloughs; but if deep injections be given there will be no sloughs or abscesses if the solution used be sterile. In many cases quinin by the mouth has a different effect from that given in some other way. I saw a lady with well-pronounced intermittent fever, not of severe type. When she took quinin by the mouth she had delusions and hallucinations. She took it several days without effect, but when the fever began to respond to the quinin and the paroxysms became less severe she had dreams. She recognized them as dreams, but one morning she thought that all the dreams she had had were real. The quinin was stopped and the hallucinations subsided, but then the fever returned. I was in a quandry as to what treatment to give. The rectum was irritable, so I could not treat her in this way. She was a highly nervous, sensitive woman and I did not dare to propose the use of this method. I then gave her from 150 to 200 grains of quinin mixed with equal parts of oleic acid and one-third the amount of coca butter, and this was rubbed in daily. The temperature then came down and did not return, nor did she have any more hallucinations. Quinin by the mouth has a different effect from that when given by the skin, by inunctions or hypodermatically. In another case of a returned soldier the quinin was given by inunction; 200 grains were given daily. He could not take the drug by the mouth or rectum, for it would not be absorbed. He was afraid to take the injections through fear of abscesses. He took it by the skin in this way, and his recovery was very prompt.

DR. H. A. HARE of Philadelphia.—It seems to me the discussion of an important subject illustrates one of the most important points. The readers of the papers and the discussers, including myself, are men who may have less opportunity of studying the conditions now discussed than many of the gentlemen in the audience. I think it is rather unfortunate that physicians who have large opportunities credited to them have not done more toward the study of this subject.

What has been said regarding the absorption of the drug is true. I think one of the greatest questions connected with the therapeutics of quinin is regarding the time to give the drug; physicians are not sure of the alimentary canal, whether it is in condition to receive the drug. Quinin is precipitated by the juice of the stomach, and it is often found that it will not be absorbed at all. The use of mercurials and acids as resorted to in the South is exceedingly advantageous. I am inclined to believe that many physicians, not having been trained in the use of the microscope, often make a diagnosis of this disease when malaria is not present at all; I often come across cases illustrating this point. Again the diagnosis is often made of malarial fever, mild in character, which is not malaria at all. I would like to reiterate the fact that where the clinical course is like certain types of malarial fever a blood examination alone will prove the diagnosis to be correct.

It is unfair to Dr. Dock to refer to a certain method as the Gody's method. My experience has taught me that this is the proper time to give the quinin, and I have used it months with great success.

One other point regarding the hypodermic administration of the drug; this is most useless. I make a difference between the hypodermic method and the intravenous injections. There is great difficulty in absorption except in an acid medium. Quinin in the tissues is precipitated by the alkaline juices of the tissues. The quinin is precipitated and is immediately surrounded by an inflammatory exudate and is absorbed like catgut ligature. The drug should be injected into the veins; the medium in which it is carried is a normal saline solution, and it should be injected slowly. There is one important point that physicians should remember: that is that when quinin comes in direct contact with the heart it is terribly depressing; in animals it acts in the same way as in man. In a Newfoundland dog quinin was injected into the veins and the heart stopped at once. Do not forget the point that large doses are depressing to the heart, and may do the patient much damage.

DR. DUNHAM of Cincinnati.—I wish to make a plea for the use of the hypodermic syringe. There is a salt of quinin which is sometimes overlooked, and that is a double salt put up by Merck. It is soluble in equal parts of water, and can be inserted in small quantities between the gluteal fold. This injection will be absorbed, and cases will yield readily if it can be kept out of the muscles, and the inflammation kept down. All cases of malaria need not be treated by hypodermic injection, but only those cases where it is impossible to get quinin into the system in any other way. The great trouble seems to be in finding out when to give the quinin, and whether you have not something else to contend with. There is nothing nicer to give with quinin than calomel or a little acid; I prefer the calomel. The time of giving quinin is very important—that is, the time of getting quinin into the blood. If quinin is brought into the blood at one time it is one thing; but if at another time, it is another. If the malarial organism is surrounded by red blood-corpuscles it is difficult to get the quinin to act upon the organism. If the quinin is introduced after segmentation, good effects will follow. In the tertian or quartan forms you do not get the full effects in the first day; it is best to catch the organisms as they are segmenting. By using the double salt of quinin you can place in the blood your drug at the time it is needed. The pain in using the hypodermic injection is very greatly reduced—almost to a minimum—by using the double salt of quinin, using two parts of water, and by keeping between the deep gluteal muscles.

DR. J. C. WILSON of Philadelphia spoke of his experience in the German Hospital of Philadelphia with reference to outbreaks of malarial disease latent for weeks and months, in soldiers who had served in Cuba and Porto Rico. Many of these cases had stubbornly resisted quinin by the mouth, even

in large doses and administered under most varied circumstances, but yielded to moderate doses by the hypodermic method—in some instances the double salt of quinin and urea being used; sometimes the hydrochlorate of quinin.

With reference to the precipitation of the quinin salts in the alkaline fluid of the subcutaneous tissues our knowledge is somewhat limited. If precipitated it is certainly redissolved and absorbed, as shown by unquestioned therapeutic results. If precipitated under these circumstances, it is equally liable to be precipitated in the blood when introduced into the veins.

The cases of Panama and Chagres fever, at one time common in our coast-wise vessels, usually admitted to the hospital comatose, yielded promptly to large doses of quinin hypodermically and by the rectum.

DR. GEORGE DOCK of Ann Arbor, Mich.—In order to make my paper short I left out all else except that which referred to quinin alone. Individuals differ, and a great deal is often required besides the giving of quinin. Regarding Dr. Fackler's paper, he has given strong evidence of what a number of observers have stated. In all cases of Dr. Fackler's, quinin was given at a time when it was less likely to do good. In regard to the hypodermic injection I only wish to state that the hypodermic method, in my opinion, is necessary in many cases. Deep injections are better than strong injections. If given in the muscles there is less pain and less tendency to the formation of abscesses. In any case the salt of quinin is apt to give pain and to cause abscess; these facts cannot be lightly turned aside.

DR. G. A. FACKLER, in conclusion, wished to be positive that his statement in regard to the method of quinin injection was not misconstrued. In every case the deep injection was resorted to. In no case was an effort made to administer the remedy at a time coincident with a certain phase of the fever, and, yet, to some of our patients it was accidentally given in accordance with the suggestions of Dr. Dock. The question of the proper time for the exhibition of quinin in malaria is still *sub judice* and will probably never be settled to the satisfaction of all. The preceding discussion illustrates the various opinions entertained as to the absorption of quinin. It is universally acknowledged that the conditions of the digestive tract and of the circulatory organs play an important role in the absorption of the drug. The amount absorbed and the period required for this act must vary with the condition of the part into which it is introduced. Hence the utter folly of predicting the positive action of quinin within or at a specified period of time after its administration by mouth or injection. Much more rational is the introduction by either method into the body, of a dose, at stated intervals in the course of the day so as to insure the presence of a therapeutically effective amount of quinin in the circulating media at all times during that day. This plan was followed in all our cases and the results secured were certainly practical illustrations of its efficacy. I desire finally to call attention to the dearth of detailed reports of series of cases treated by the hypodermic injection of quinin and the uncertainty of the value of observations made upon one case by one individual. It would certainly be desirable that those who have made general assertions as to the efficacy of this method in the treatment of malaria should contribute specific reports of their cases to the literature upon the subject.

EXSTROPHY OF THE BLADDER.*

BY C. A. WHEATON, M.D.

ST. PAUL, MINN.

None of the congenital defects of man have elicited a greater diversity of opinion as to etiology, or more difficulty in correction than those affecting the genital extremity. Until a comparatively recent date the deformities of the genitalia of the male and female offspring were attributed to failure in the evolution of the structures which go to make up the distinctive characteristics of sex.

Embryology teaches us that the allantois is the fetal structure from which is derived the bladder and its suspensory ligament; that the urethra is primarily a groove opened below, which gradually advances from the urogenital sinus, and from the imperfect closure of this groove and the imperfect elaboration of this allantoic structure arise the defects which I have selected to here discuss briefly. The latest, and perhaps the best, résumé of this subject is to be found in an article written by F. Tilden Brown[1]. In this he leads us to understand that the etiologic factor in the production of hypospadis and epispadias is practically the same, that "both conditions are due to the rupture of the urethra in consequence of urinary retention by the absence or retarded formation of the glandular urethra."

"The usual theory of epispadias is similar to that which explains hypospadias as due to incomplete or faulty development of the parts affected. Thus, Thiersch regarded the malformation as due to a pelvic closure and division of the cloaca, which was faulty as regards time. Under normal circumstances pelvic closure occurs first, so that the corpora cavernosa, developing in connection with the rami of the pubes, are already agglutinated to the sexual buds before the sinus urogenitalis is pushed forward by the developing perineum. But if the cloacal division occurs before pelvic closure, the two halves of the corpora cavernosa are not united; the urogenital sinus is pushed forward between them, and they unite below instead of above it. This hypothesis evidently depends for its premise on the absence of the symphysis, and, unfortunately for it, the symphysis is not always absent. On the other hand, a number of facts undoubtedly favor the rupture hypothesis, and are quite inexplicable on any theory of defective development. Absence of imperviousness of the urethra leads to accumulation of urine in the bladder and dilatation of that organ; a rupture occurs at a time when the abdominal envelopes are not yet quite perfect, and this rupture may affect the entire urinary sac from the navel down, or only its lower part. So we get epispadias with exstrophy of the bladder, or simple epispadias. Thus, Thiersch has proved, both in the dead and living subject, that the ureters are much dilated in all these cases; he even succeeding in passing a No. 6 English catheter through the ureters into the pelvis of the kidney. Scar tissue also is found all around the bladder opening, as from an unsuccessful plastic operation—distinct evidences of rupture and cicatrization.

"But the most incontestable proof of the correctness of this so-called mechanical theory of the origin of epispadias is found in the cases of intra-uterine healing of exstrophy of the bladder and of epispadias, of which the best case is that of Kuster. Here, in a boy 1 year and 7 months old, an unmistakable scar stretched from the umbilicus on to the dorsum of the penis. In fact, it may well be that the separation of the pubic rami is the direct effect of the same urinary retention that causes rupture of the vesical and urethral walls. Thus, an early rupture of the urethra would give us a simple epispadias with normal symphysis, whereas, if this early rupture does not occur, the symphysis separates; if the urethra now ruptures, we get simple epispadias with absence of symphysis. If both bladder and urethra rupture we get exstrophy of the bladder and epispadias."

It has been unquestionably demonstrated that the excretion of urine is active during the latter months of fetal life, and that the bladder undoubtedly fills and empties itself frequently during that period, and a careful review of the literature of the subject leads me to believe that this is the correct explanation of these peculiar caprices of Nature. It is not my purpose to discuss the causes of these defects; but to submit for your consideration the following cases which seem to me to be of special interest.

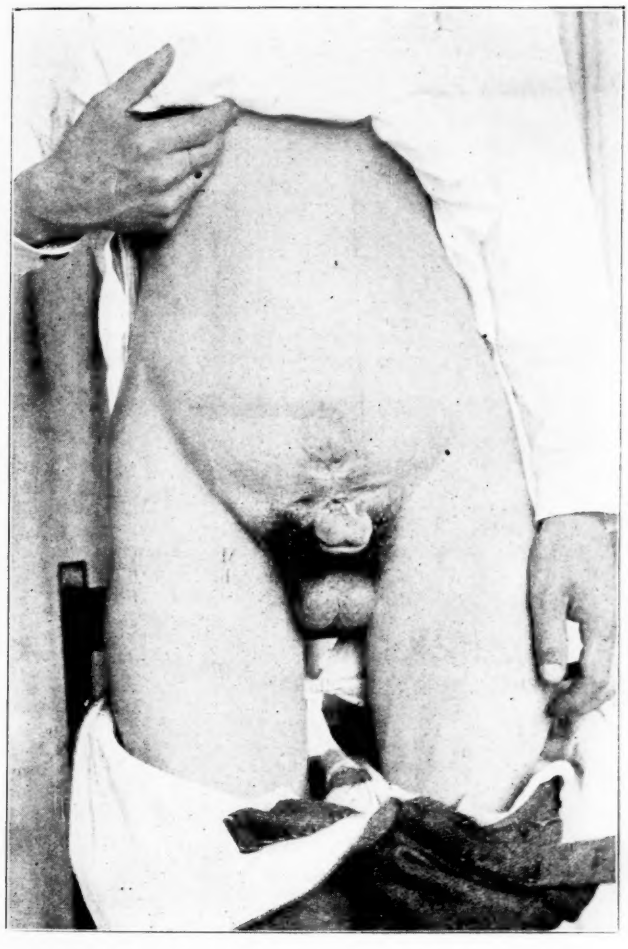
* Presented to the Section on Surgery and Anatomy, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

[1] Disease and Injuries of Urethra: Morrow's "Genito-Urinary Diseases," vol. i.

The case of a Prussian, 23 years old, who presented himself for examination with the hope that I might be able to relieve his hypospadias and correct the incurvation of the rudimentary penis, is of interest. He was of good physique, but with a somewhat effeminate face; just a suggestion of a beard about the cheeks. Stripped, standing erect, with his face covered, he seemed to be a muscular woman. He had a well-developed bust, effeminate shoulders and upper arms. From the navel down, however, he was decidedly masculine. He had masculine hips, masculine thighs and legs; the external genitalia suggested a female vulva, but unusually prominent. When he lay on his back, with thighs separated, I was able to demonstrate a perineal hypospadias; that the structures which resembled the vulva were really the scrotal pouches containing a testis on either side of the median fissure and the urethral opening deep in the

perineum, with a groove running forward to the rudimentary penis, lined with mucous membrane, and which suggested the introitis vaginæ. This young man was masculine in his tastes and voice, and had it not been for the development of the mammæ would have been of no special interest other than that of an aggravated hypospadias. He has no affinities for his own sex, stating that they were entirely confined to the opposite sex. There had never been any suggestion of menstruation; there had never been any periodic bleeding. The mammæ were quite symmetric and the size of those of a girl of ordinary development at the age of 18 years. They were not of unusual size until the age of puberty, and developed at the time when the sexual characteristics became a pronounced feature of the development of the boy. He was then a mixture of the two sexes. It would almost seem that Nature, realizing the imperfection of the congenital development, had supplemented this unusual condition by providing the young man with a mammary development which would be in consonance with his apparent sex. This case, in this light, is unique and worthy of record. I would add that an examination per rectum demonstrated the existence of a prostate and other pelvic structures normally a part of the genito-urinary apparatus.

Another case, a male of 17 years, of American parentage, and fair physical development, came to me for the relief of incontinence, the urine escaping from a penile epispadias of which he had been the unfortunate possessor since birth. The penis presented on its dorsal aspect, from beneath the pubic arch to the glans, a groove lined with mucous membrane which could be followed back beneath the pubic arch so that the finger could be



introduced nearly to the neck of the bladder. The prostate seemed rudimentary, but was normal in shape. He was unable to keep himself dry because of the incontinence of urine.

I did not adopt the operation advised by Thiersch, namely, that of establishing a perineal fistula before attempting to close the epispadias; but made a roof to the urethra by bringing down a flap of skin which occupied the crescent-shaped, hairless surface immediately above the arch of the pubis. A trap-door was dissected down and laid along the dorsum of the penis, its epithelial surface being applied to the roof of the urethral furrow, and its lateral margins being let into slits on either side of the prospective urethra and there fixed by interrupted sutures. A catheter was kept in the bladder for a week and the boy kept sufficiently under the influence of opium to prevent erection. About half of the transplanted flap united, and incontinence has been entirely

overcome. The operation was a failure so far as restoring the canal in its entirety is concerned, and will have to be repeated in order that the organ may be of service for procreation. The physician who attended the accouchment at the birth of this child states that the little rudimentary penis was adherent to the abdominal wall and that he separated it from its adhesion by simple traction. These cases are sufficiently rare to justify their being made a part of the literature of this most interesting deformity.

The third case is one of aggravated epispadias with exstrophy of the bladder. This one I operated on when he was 16 years of age. He suffered, as all such unfortunates do, from eczema of the lower abdomen and thighs; was a constant source of offense to himself and everybody else, in consequence of the exposed surface of the bladder and the constantly leaking ureters. There

was a rudimentary penis and a rudimentary corpora cavernosa attaching to the rudimentary public bones on either side, the pubic symphysis being entirely absent. The right testicle was in the inguinal canal; the left undescended and could not be felt. The cutaneous margins of the exstrophy, particularly in the median line, presented a peculiar cicatricial appearance "as though an unsuccesful plastic operation" had been made, as mentioned in the foregoing portion of my paper, but strangest of all in this boy's case, was the absence of a navel. The allantoic structures had evidently failed to be continued to the normal point of attachment for the urachus, and the umbilical cord had emerged from the opening immediately above the exposed bladder. I dissected a quadrangle of skin free, the long axis of which was transverse to the vertical axis of the perineum, leaving both ends attached. I pulled the rudimentary penis down beneath this bridle and fixed it by sutures. I then turned down a crescent of skin from above the bladder, inverting it, thus turning the epithelial surface inward. Then flaps of sufficient size were brought up from the groins, rotated on their pedicles and brought in contact with the raw surface of the crescent brought down from above. He recovered from the operation, which was made some five years ago, and has been made infinitely more comfortable by it. Of course, he has incontinence, but the urine is discharged only through the one opening, i. e., the urethra which I made, and he is able to direct it into a rubber urinal, which keeps him dry.

All these cases presented, in the immediate vicinity of the defects, the peculiar condition of skin referred to above, suggesting old cicatrization. There was comparatively little hairy development on the surface of the last boy's abdomen at the time I turned the crescent down to make a roof for the bladder. When I saw him a few days ago he told me that he was suffering from the presence of phosphatic deposits in and about the bladder, and on examination I was able to detect the presence of numerous little stalactites which had their origin from the deposits of urine salts on the hairy projections from the bladder roof.

In the case of epispadias without exstrophy of the bladder, the urethra terminated in a funnel-shaped opening beneath the pubic arch. The bladder was continent until the quantity of about eight ounces of urine was overpassed, when the incontinence commenced. The boy, while wet all the time, if asked to urinate, would pass about eight ounces of urine. The urine emerged from beneath the pubic arch in explosive fashion, and there was absolutely no ability to direct it into any receptacle. Since the operation he has been able to direct it with comparative accuracy. This condition of affairs demonstrates that, while the repressive influence of the deep urethra was deficient, it was not entirely wanting, inasmuch as my having been able to extend the urethra about an inch beyond the pubis has done away with incontinence and has put the function of the organ practically within his control.

EXSTROPHY OF THE BLADDER.*

BY DUDLEY P. ALLEN, M.D.

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CLEVELAND.

In presenting to this Association a case of exstrophy of the bladder, it is not my purpose to enter on a prolonged discussion nor into a lengthy historic sketch of the various operations which have been proposed for its relief. I wish simply to present a case on which I have operated, that it may be added to others operated on in the same way, and thus bear evidence of the success of this method of treatment. It may be in place, however, in presenting the case, to speak very briefly of the various operations which have been introduced for the relief of the malady, together with some of the objections to them.

All methods which have been introduced for the formation of a covering for the exposed mucous membrane of the bladder have two objections. The first is that, although by covering the exposed mucous membrane they preserve it from external irritation, they do not prevent

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the escape of urine. This escapes and soils the patient, exactly as it did before the operation. The method of covering the mucous membrane by turning a flap of skin over on it, placing the epithelium of the skin next to the bladder, by whatever means it is accomplished, has a second very grave objection, viz., that the hair of the integument favors the incrustation of the interior of the artificially formed bladder with phosphates. The discomfort caused by the presence of phosphates in the cases which I have observed is far greater than the discomfort arising from the exposed mucous membrane. In several cases of this sort, operated on by other surgeons, and which have come under my observation, it has been necessary for me to clear away the phosphates. The suffering which they caused was so great that the operation has been worse than useless.

Murrey[1] has proposed an operation differing somewhat from those usually employed. He describes three cases in which he has covered the mucous surface of the bladder by flaps cut from either side of the bladder, the flaps being a little broader than the exposed mucous membrane, these rectangular flaps being drawn together over the bladder and united in the median line. The integument is not turned inward, as in most other operations, but the raw under surface of the flap comes in contact with the mucous surface of the bladder and heals by cicatrization. He claims that his cases have been less troubled by the accumulation of phosphates than those operated on by other methods of inverting the flaps.

I shall not undertake to describe the suggestions of Simon, Czerny, Segond, Pozzi, or any other of the vast number which have been made for relieving this deformity by plastic operations. By none of them, so far as I have been able to ascertain, has there been a single case in which the free escape of urine has been efficiently controlled. A plan proposed by Sonnenburg, of drawing the ureters downward and forward, close to the base of the penis, which is always in a condition of epispadias, has the advantage that it makes it much more easy to catch the escaping urine in a receptacle than it otherwise would be, and by this method the exposed and sensitive mucous membrane of the bladder is dissected away. In my judgment it is one of the best methods proposed, excepting that of Maydl, which I shall soon describe.

The plan suggested by Trendelenburg, of forcing the pelvic bones together at the pubes, where they are always separated to the distance of an inch or thereabouts, by dividing the pelvis at the iliosacral synchondrosis and afterward uniting the edges of the exposed bladder by drawing them together in the median line, while forming a small bladder out of the existing mucous membrane, does not form a new sphincter nor does it relieve the patient from the free escape of urine.

The methods of uniting the pubic bones, suggested by Koenig and Küster, by dividing with a chisel the iliac bone down to the great sciatic notch, or that proposed by Koch of Groningen, Holland, of bringing the bones together by brisement forcé, do not differ in principle from that proposed by Trendelenburg, offering no superior method for controlling the free escape of urine. Rutkowski[2] has reported a case in which he removed from the small intestine a section of the gut, preserving the mesenteric attachment, and bringing it outside of the abdomen and laying open this section longitudinally, used it to form a new anterior wall to the bladder. The method is most ingenious, but does not provide a sphincter to control the escape of urine.

The plan proposed by Reginald Harrison of extirpating one kidney and drawing the ureter of the other kidney out through the patient's side, so that the urine can be more easily caught than can be done in the pubic region, has little to recommend it. In fact, none of the methods mentioned prevent the uncontrolled escape of urine, and although they may make it easier to catch the urine as it escapes, they do not relieve the patient from what is one of the most extremely trying conditions.

In 1894 a method was described by Maydl of Prag, of grafting the ureters into the sigmoid flexure of the large intestine. At that time he described two cases operated on in this way. Two years later he described three other cases, and publishes[3] five additional cases, making ten operated on by himself, and ten others operated on by other German surgeons. He says he has thus far found no cases operated by this method outside of Germany. He also reviews operations made by the Trendelenburg method.

The method which he proposed and the one which I have adopted in the present case is to remove all of the exposed mucous membrane of the bladder excepting that which is immediately around the openings of the two ureters. After this has been done the abdomen is opened, the ureters are mobilized and the sigmoid flexure is drawn from the abdominal opening. A longitudinal incision is made into the intestine and the extremity of the ureters with their mucous covering is inserted into the sigmoid and made fast by a series of sutures. When this has been done the intestine is dropped backward into the abdominal cavity and the abdominal cavity is closed. An operation of this sort requires great delicacy in its execution, to avoid infection and to insure a perfect result. The wounding of the ureters can be avoided by inserting a small bougie into their openings. In my case this was easy on one side. On the other it was attempted, but I failed to insert the bougie into the orifice of the ureter. The existing separation of the pubic bones from each other to a distance of an inch or thereabouts, and the dissecting away of the mucous surface of the exposed bladder leaves a weak spot in the abdominal wall which it is difficult to repair. In my case I split the rectus muscle on either side and united the divided portions of the muscle in the median line, thus repairing the defect and greatly strengthening the lower abdominal wall. After the ureters had been implanted into the sigmoid and the anterior abdominal opening had been closed, in order to insure the free escape of urine through the bowel, the sphincter ani was thoroughly stretched and a drainage-tube was carried well up into the rectum. The patient bore the operation well, complained of relatively little discomfort, and within a few hours after the operation began to pass urine per rectum. At no time was the patient's condition at all serious, and he made a rapid and most satisfactory recovery.

The operation was performed on November 3, and the patient was discharged from the hospital on Dec. 10, 1898. He has been in excellent health since the operation. He has had no irritation of any sort from the retention of the urine in the large intestine, and he retains it without difficulty during the day, from four to five hours, and during the entire night.

Dr. Fowler[4] of Brooklyn has reported a modification of Maydl's method for implanting the ureters into the rectum. He surrounds the divided extremities of the ureters by an infolded flap of mucous membrane taken from the bowel. The method is very ingenious, but it seems to me questionable whether the artificial protection against infection of the kidneys thus secured sur-

passes that afforded by the natural openings of the ureters through the mucous membrane, as formed by nature.

The statistics of the operations which have been performed by various other methods up to this date are well summarized by Pousson[5].

Up to the present time it seems to me no method proposed gives as much relief as that used on the patient above. The number of cases already operated on, the small number of deaths, the relief gained, and the exemption from consequent infection of the kidneys for periods extending up to several years are strong evidence of the value of the operation. It is far superior to any other method previously attempted. A final judgment must be reserved until the results have been followed for a longer period, but even should the kidneys become ultimately diseased as a result of the operation, I question whether a few years' comfort, permitting an individual to mingle freely with his fellows, would not be preferred to a longer existence under the previously existing disabilities and necessary isolation.

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EXSTROPHY OF THE BLADDER.

OPERATIVE TREATMENT WITH SPECIAL REFERENCE TO MAYDL'S OPERATION.*

BY RUDOLPH MATAS, M.D.

NEW ORLEANS.

The remarkable and brilliant results obtained by Dr. Allen, and the interesting practical paper by Dr. Wheaton, forcibly exhibit all the possibilities and resources of the most advanced surgical technic in dealing with this rebellious and pitiable condition, and they encourage us in the belief that the aspirations of a half century of earnest, incessant and laborious effort in a special field of surgical thought are about to be crowned with success. It is just such evidence as that presented to us by Dr. Allen that the mass of the profession has been patiently awaiting before accepting, as an accomplished fact, that which until recently has been looked on only as a hope, a possibility—the radical cure of exstrophy of the bladder. The importance and value of these contributions can not be overestimated when we consider that they are presented to us just as we have reached the turning-point between the two great epochs in the history of the subject—epochs which we would distinguish as the old or palliative and the modern or radical period.

The surgical history of exstrophy of the bladder is a fair reflex or mirror of the progress accomplished in surgery. The cure of ectopia vesicæ is a problem that has confronted and vexed the surgeon for nearly a century. The ancients simply referred to this condition and described it; to them it was a hopeless state, a *lusus naturae* which was as distant from the resources of art as it was pitiable, distressing and degrading. If we except the early and unfortunate attempts of Dubois and Dupuy, in 1806, and of Gerdy, in 1845, we find all references to the treatment of this deformity passed by in silence until the last half of the present century, when, under the impetus given to operative surgery by anesthesia, we discover the first serious and sustained efforts to ameliorate the condition of its unfortunate victims. Here and there a daring genius, more adventurous than his contemporaries, had the courage to attempt methods of relief that were in advance of the resources of his period, but these isolated attempts failed and lapsed into oblivion. To this category belong the early, daring operations of Lloyd (1851), John Simon (1852), and Roux (1853), who suggested and attempted means of permanent relief by extirpating the offending organ and deviating the course of the urinary flow into the rectum. But the failure of such early efforts is not surprising when we consider the imperfection of the technic. As in the history of many other rebellious and difficult morbid states, such premature efforts had to remain sterile until further evolution had made the conditions ripe for their fructification and fulfilment. Thus it is that the surgical treatment of exstrophy of the bladder has in the last fifty years witnessed two distinct periods of surgical activity and enterprise, during which suggestions and methods of relief have accumulated and multiplied until the literature of the subject has attained voluminous and exhausting proportions.

As characteristic of the older period, which extends from the fifth to the ninth decade of the present century, we notice the prevalence and dominance of extraperitoneal operation—the purely plastic period in which every imaginable method of utilizing the skin adjacent to the bladder is suggested and devised. It is the period which Richard, Alquie, T. Holmes, N. Wood, Lefort, Thiersch, Humberg, Rydygier, Pancoast, Ayres, Greig Smith, Pozzi and many others have enriched with their ingenuity and experience. By these methods all that was aimed at and obtained was a cosmetic and palliative effect; the protruding, prolapsed bladder was covered with skin, and the accompanying epispadias was sometimes cleverly, though more often only clumsily, relieved. These methods have been fruitful in teaching us how to overcome the obstacles in the way of plastic repair in regions which are bathed with a septic and irritating fluid, and how best to utilize the skin so as to cover a large loss of substance. But, at best, the results were chiefly cosmetic, and only helped the sufferer by making his complaint more bearable, and by placing the parts in a more favorable condition for drainage. But apart from this, what could be expected from the purely dermatoplastic methods? They were incapable of providing a sphincter which would regulate the urinary flow, and they left the unavoidable cystitis unrelieved; on the contrary, even when a small receptacle or pouch was formed for the retention of a few centimeters of decomposing urine, the growth of hair on the inner or inverted surface of the skin flap favored the precipitation of urinary salts and the deposit of calcareous incrustations, which irritated the sensitive mucosa more than ever. No better results were obtained by the suggestion of Segond, who dissected the vesical mucosa out of its peritoneal bed and used the dissected membrane to cover the penile defect (epispadias), and held it in place by a flap ingeniously borrowed from the scrotum. Nor better, functionally, is the old and original method of Dubois and Dupuytren, resurrected subsequently in a more formidable and dangerous form by Trendelenburg, Passavant and Neurdorfer. These operators aimed at a direct approximation of the vesical edges by forcibly narrowing the pelvic girdle and approximating the undeveloped pubic arch by sections made at the sacroiliac joint and other parts in the pelvic skeleton. The peril of such violent methods, coupled with their insufficiency, even when

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the patients survived them, has led many operators, even up to the present, to abandon all efforts at reconstructing the bladder, or making it a useful receptacle. Many now satisfy themselves with Sonnenberg's (1882) operation, and simply transplant the ureters from their insertion in the bladder to the root of the penis, or even into the glans, where the urine can be directed more effectually into the artificial receptacle intended for the purpose.

While surgeons were still busy pursuing the ignis fatuus of a mode of cure by purely plastic methods, others sought a solution of the problem in more radical but also more perilous directions. The old and forgotten experiments of Roux, Simon and Lloyd were revived, and, with the encouragement offered by the success of aseptic methods, the modern radical period was inaugurated by the clinical and experimental observations of Thomas Smith of London (1879), Gluck and Zeller (1881), Bardenheur, Novaro (1887), and more especially by Tuffier (1888), who obtained a unique success in the human subject by his method of extirpation of the bladder and transplantation of the ureters into the lower intestinal tract. But the results of these experiments and isolated operative attempts were almost constantly and uniformly unfavorable. Septic peritonitis and, more often a secondary pyelonephritis from ascending ureteral infection beginning at the open mouths of the transplanted ureters was almost the unavoidable and promptly fatal consequence of this mode of intervention.

Septic peritonitis, nephritis and stricture of the ureter constituted the formidable trio which had apparently combined to defeat the advance of the surgeon in this direction, and for a time the goal appeared to be as far from reach as ever. Nevertheless, the complexities and difficulties of the problem only appeared to arouse greater interest in the solution of the problem, and new methods and suggestions by which to avoid the most dangerous of the complications—pyelonephritis—soon multiplied to an almost embarrassing extent. The names of Morestin, Chaput, Giordano, Mauclaire, Harvey Reed, W. Van Hook, Kuster, Budinger, Boari, Witzel, Vignoni Pisani and Krynski are among those made familiar to the student of the subject by the more or less practical suggestions and improvements they have contributed to the solution of this difficult question.

Nevertheless, and apart from a few isolated successes obtained in transplanting a single ureter (Chaput, Boari), the operation of ureteral grafting when simultaneously applied to both ureters had not been demonstrated to be a practical and successful operation in the human subject until Maydl, of Prague, startled us in 1893-94, with the report of two cases of exstrophy of the bladder which he had relieved permanently and happily by his original method of transplanting the ureters, including the sphincter apparatus, into the sigmoid flexure of the colon.

At first Maydl had few imitators, Bergenhem followed in 1895, then Krynski, Resigotti and Trombetta in 1896, in all five operations and five successes. In 1896 Maydl reported three aditional new cases of his own with one death. In his latest contribution[1] he tabulates a total of twenty operations, including his own, and if we now add Dr. Allen's case, we will have a total of twenty-two cases with only three fatalities. This total of twenty-two cases and three deaths, or a little over 13 per cent., is a most extraordinary record for a new operation involving delicate and difficult manipulations in the abdominal cavity. Few abdominal operations of this magnitude have been followed by such a measure of initial success as in this case, and what is more striking and encouraging is that these results have been obtained not only by the initiator himself, but by a number of operators who have followed each other in close succession in different parts of the world.

The question arises, how many cases operated on by this method have not been reported; and, again, how many of these ended fatally? The well-known aversion of most men to admit or publish their failures justifies the belief that the mortality could probably be increased if we only knew where to ferret out the facts. But, on the other hand, this argument holds equally true for the other methods, and the fact remains that since the cure of exstrophy has been attempted by extirpation of the bladder and the grafting of the ureters into the lower intestinal tract, no record has been anywhere published which could compare in the number of cases and brilliancy of results, with that which Maydl can claim for his operation.

Are we prepared, on the strength of the evidence presented, to say with Trombetta that "the therapeutic problem involved in the radical cure of exstrophy of the bladder has found its complete solution in Maydl's operation, and that from this on it would be foolish to return to the autoplastic methods which, up to the present have so unproductively exercised the brain and hand of the surgeon." That this is not the opinion of all surgeons, and that there is still some doubt as to its superiority and greater safety over all methods recently suggested, is attested by the diverse procedures that have appeared and have been applied with variable success since Maydl's results became known to the profession. The contribution of Boari, who experimented successfully on animals, with his ingenious anastomotic button; the operations of Krynski, Vignoni, Pisani, G. Ryerson Fowler and Franklin H. Martin, are subsequent to Maydl's work, and suggest to us that these observers regard the advantage obtained by the transplantation of the elliptical piece of the vesical trigone, which contains the valvular insertion and sphincter apparatus of the ureters—a capital and distinctive point of Maydl's operation—to be illusory, or at least of doubtful advantage.

More recently still we have read in an article on exstrophy and vesical plastics by Max Rutkowski[2], an assistant in Obalinski's clinic at Cracow, that it is not in accordance with the conservative tendencies of modern surgery to sacrifice existing organs or parts of organs, provided these are healthy. He is therefore not in favor of Maydl's operation, which extirpates a rudimentary bladder, though he is compelled to admit the remarkable success thus far obtained with this procedure. He accordingly believes in a return to plastic methods, provided these are radically modified in accordance with modern and more rational ideas. He contends that the cause of failure of the old plastic operations was due to the unphysiologic attempt to repair a defect in the urinary bladder by substituting, for mucous membrane, skin, which not only acts as a foreign body, but is devoid of muscular fibers, and serves no useful purpose in the repair of a contractile organ. He then refers to the remarkable experiment of Tizzoni and Poggi who, in 1889, succeeded in completely reconstructing the urinary bladder, which they had previously extirpated, by borrowing mucous membrane from the intestinal canal. They formed this organ out of a segment of bowel which had been separated by exclusion from the intestinal tract; they then grafted the ureters into a newly-made receptacle and thus succeeded in creating a new bladder.

[1] Wiener Med. Woch., 1899, Nos. 6-8.

[2] Centralbl. f. Chir., April 22, 1899.

In imitation of this procedure, Rutkowski very ingeniously and with extraordinary skill proceeded to cure an exstrophy of the bladder in a boy, 12 years of age, who had previously undergone Trendelenburg's and Rydygier's operations unsuccessfully. Rutkowski's procedure is as novel and ingenious as it is dangerous. He made an abdominal section above the level of the exstrophied bladder and drew out a loop of the ileum and resected 6 cm. of intestine. This section of bowel he kept alive and nourished by leaving a mesenteric pedicle attached. The continuity of the intestinal tract was then restored by circular enterorraphy, the excluded segment was split at its convexity and the mucous membrane was stretched out and sutured to the refreshed margins of the bladder. The mesenteric pedicle was sufficient to nourish the intestinal graft and then the abdominal walls were approximated so as to cover the bladder, and the boy recovered. Eight weeks after the operation he was able to retain 25 cm. of urine—over an ounce—for three-quarters of an hour, the urine being expelled in a jet at a distance of 30 cm. from the body. This is certainly a remarkable exhibition of what modern surgical technic can accomplish when it is reinforced by long and diligent training in a special direction.

Rutkowski's operation is certainly unique in the history of surgery, but does the survival of the patient and the result obtained justify the risks involved in the procedure? Does it convince us that the author's argument in favor of a revival of the plastic treatment of exstrophy has been demonstrated to be correct by the results obtained in this case? Can such a result remarkable as it is, compare for an instant with the final results of Maydl's operation? No! The only advantages that we can appreciate in Rutkowski's operation lies in the fact that the ureters are not disturbed from their attachment to the bladder, and that the dangers of septic pyelonephritis are obviated, but in every other respect it is a failure when we consider the functional result as compared with such cases as those reported by Dr. Allen and other surgeons who have followed in Maydl's footsteps. We believe that we are safe in prophesying that Rutkowski's case is destined to remain a unique precedent of its kind in operative surgery, and that it is not likely to find many imitators.

The operation that now remains for our consideration, and that must command our attention, is Maydl's operation, and our efforts should be directed toward perfecting its technic in order that its risks and dangers may be reduced to the safest minimum. The dangers that must be apprehended in this procedure are, in brief: 1. The sloughing of the valvular insertion and sphincter apparatus of the ureters, after this has been severed from its vesical connections and transplanted to the bowel. 2. The possibility of contaminating the peritoneum in the course of the vesicocolostomy, and subsequently, if sloughing should occur after the operation has been completed. 3. The possible failure of the valvular insertion of the ureters to serve efficiently after the vesicoureteral graft has been successfully implanted into the bowel; in which event there is nothing to prevent the dreaded and fatal infection of the ureters and kidneys. 4. The existence of a congenital anomaly in the sigmoid or omega colon, in which the mesentery is so short that it will be impossible to drag the colon to the median incision, thus seriously complicating the technic, as in Park's fatal case.

The operator who cuts off both ureters from the bladder, and transplants them into the colon must experience a certain and unavoidable anxiety—an anxiety that only further experience will overcome—that is born of the feeling that he has burned his ship behind him and has staked all his patient's chances, all his hopes, in the hazard of the game. It is the utter and absolute hopelessness of remedying the evil when this does occur that must make any conscientious operator vacillate and question his mind and his responsibility many times over, before deciding to embark in so perilous an undertaking. But is this an argument against Maydl's operation in particular? Again, No! For the dangers that we have referred to apply equally as well, and indeed with much greater emphasis, to all the methods of ureteral grafting alike. The danger of sloughing of the bladder graft, with its attendant dangers, which is uppermost in the mind of the operator, has been to a great extent dispelled by the careful anatomical researches of Margarucci, who demonstrated at the Twelfth International Congress, held in Rome in 1894, that the ureter is nourished by an independent vascular supply which, descending from the renal side, supplies not only the ureters but the mucous membrane about its orifice, where it forms an anastomotic connection with the vessels of the vesical trigone. This is a most reassuring fact. In addition to this, the danger of ultimate stricture from cicatricial contraction of the ureteral orifice is certainly obviated by Maydl's operation in a manner not equaled by any other operation, Krynski's, Martin's or Fowler's operations, which are the next best, not excepted. But, finally, more convincing than anything else, is the real test of merit and value, the accumulated evidence of the clinical test, which indisputably demonstrates that no other operation has thus far succeeded in overcoming the risks of renal infection with more certainty and success than Maydl's procedure.

We have purposely left out of consideration the question of intestinal and rectal intolerance, because it has been abundantly demonstrated that the rectal and colonic mucous membrane will readily adapt itself to the conditions of a urinary receptacle.

Personally, my attitude toward the cure of exstrophy of the bladder by the radical method has been most conservative, and, furthermore, my conservatism has not been influenced by the recorded experience of others, but chiefly by the results of my own experience. My disgust at the unsatisfactory functional results of the classic autoplastic operations as observed in my own practice, has kept my interest ever alive to the possibilities of other methods. I have now two cases of exstrophy in which I would have long ago attempted Maydl's operation had it not been that my lack of success with ureteral transplantation in dogs made me timid and kept me from attempting the operation on the human subject. In 1896 I read Boari's communication in the Policlinico of Rome, in which the application of his ingenious buttons, devised for ureteral anastomosis, was presented in a seductive manner. I immediately sent to Italy, to the author, for a set of models, and proceeded to experiment with them without delay. I followed the technic as faithfully as possible, on two dogs, but both animals perished promptly from acute ascending renal infection. The technic was simple and beautiful, but the results were bad. This convinced me that the direct anastomosis of the ureter into the bowel without providing for a valvular arrangement was untrustworthy and should be rejected. In 1897, I undertook to perform Maydl's typical operation on two dogs; the bladder was extirpated in each and the ureters, with the elliptical flange of the vesical trigone, were sutured to the rectum. Both dogs died, one in twenty-four and the other in thirty-six hours after the operation. In both the vesico-ureteral grafts were perfect; there was no sloughing, and there was no urin-

ary or fecal leakage; in both, however, there were evidences of septic peritonitis, caused no doubt by infection from the bowel during the course of the operation; in the dog that survived thirty-six hours there were also evidences of a very intense hyperemia of the kidneys. I am fully convinced that the operation is much more simple in the human subject and less likely to be followed by septic infection, as contamination from the bladder or bowel can be much more efficiently guarded against—especially if the sigmoid mesocolon is long enough to permit the bowel to be dragged out of the median incision.

I would summarize my impressions as follows:

1. All autoplastic methods proposed for the cure of exstrophy of the bladder are unsatisfactory and, at best, simply palliative.

2. Of all the radical methods which involve an excision of the bladder and a transplantation of the ureters to the rectum, Maydl's operation is by far the most complete, rational and satisfactory, from the technical point of view.

3. Maydl's operation offers the best conditions for the complete correction of the associate epispadias.

4. Notwithstanding the comparatively large number of successful cases accredited to this method, its relation is not yet fully ascertained, though the ratio, as obtained from published cases—over 13 per cent.—establishes the superiority of this method above all others from the prognostic point of view.

5. Notwithstanding the apparent theoretic simplicity of its technic, Maydl's operation is a difficult, laborious, and in many respects a dangerous, operation and should only be undertaken by those who have thoroughly familiarized themselves with its difficulties by special training in abdominal surgery, supplemented, if possible, by experimental work.

6. It should not be applied indiscriminately to all cases, but only to those patients whose general condition is such as to warrant a long tedious operation likely to be attended by serious shock; and whose eliminating organs, especially the kidneys, are normal and capable of effective elimination.

DISCUSSION ON PAPERS OF DRS. ALLEN, WHEATON AND MATAS.

DR. J. RILUS EASTMAN, Indianapolis.—In the Doctor's case there has been no resulting proctitis. This has been the chief objection. Dr. Allen deserved the honor of being the first man in America to make successful the Maydl operation; it is not rational to make the operation; circumstances tend to combine which contraindicate this method. Sonnenberg of Berlin dissects the ureters out behind the peritoneum and stitches them in the tip of the penis. My case was one in which both kidneys were more or less disorganized—one side a pyonephrosis and on the right a chronic nephritis. I did not implant these ureters; my boy was exsanguinated; he had not the strength to stand such a heroic operation, so I applied the method of Sonnenberg. Before I made the operation, however, I removed the left kidney, which was in a condition of pyonephrosis and was emaciating the boy and would have killed him. I brought the ureter on the right side and stitched it into the tip of the penis, grooved it with an incision and stitched the right ureter into this, so the boy can now wear a urinal. I have made an aluminum tank which fits around his thigh, not over three-eighths or a quarter of an inch in thickness, and which is connected with the pubes by a rubber tube with a pneumatic collar, and into which the penis—the little club-epispadiac penis—with its ureter will fit, and which I hope will give him some relief. When we bear in mind that this boy lived for twelve years in a most pitiable condition, the mother changing his diapers three or four times in an hour, he being helpless for ten years, one can appreciate the amount of relief obtained; still it cannot be gainsaid that the Maydl operation is one of choice. Certainly this operation would indicate it, as it removes all this dribbling of the urine and the horrors of having to change diapers three or four times an hour.

DR. W. J. MEANS, Columbus.—We are all agreed that the Maydl operation is the one, and all are proud to see the exemplification of this operation by an American surgeon. This boy was certainly a pitiable object when he was brought to the Protestant Hospital. He was 15 years old, and it was a question whether he was a boy or a girl; he was excluded from society. We sent him home, as you see, dressed up like a young man, true to his belief that the operation, while only palliative, will be a source of relief to him that will justify any experience he may have gone through. The operation in his case is not yet fully complete. I had intended to make a urethra that would have extended out to the glans, but you will remember that this operation was only made on the 13th day of April and I have just now gotten the parts entirely healed up. There is one trouble in making these operations. You always have plenty of water and you have to provide a way for it. You will notice that the cleft in the pelvis is at least three inches. I leave it to your judgment whether such a cleft should be closed with any degree of safety to this boy's condition, or whether it can be remedied by such an operation.

DR. D. P. ALLEN, Cleveland.—The thing is the necessity of preserving the mucous membrane about the openings of the ureters; the safety of the operation depends on it and prevents infection of the kidney. That question must depend on statistics; quite a number of cases have been observed for three, four, five and six years, without any infection of the kidney. As to work on the ureters, it seems to me that it is most hopeful. I succeeded the other day in making an end-to-end anastomosis in the case of a horse-shoe kidney, and I think if we can do that we can do a great deal with the ureter.

THE PROCESSUS VERMIFORMIS.*

ITS ANATOMY AND BIOLOGY.

BY G. G. EITEL, M.D.

MINNEAPOLIS.

The older writers on human anatomy make no especial mention of the processus vermiformis, as a separate anatomical entity, and this omission on their part probably has its explanation in the fact that this small offshoot of the intestinal canal was not looked upon by medical men generally as the cause or seat of any disease until a period so late as to be within the memory of comparatively young members of our profession to-day. It is a study, both interesting and instructive, to note the various expressions of opinion that have been advanced on the probable utility, etc., of this process by authorities on anatomy, biology and evolution. It is the purpose of this paper to invite attention to some of these writers who have devoted more than a mere casual word on the troublesome little body situated in the right iliac region.

Deaver stated, in his work on appendicitis, that the vermiform appendix in man is the undeveloped, true cecum of some of the lower animals.

Harrison Allen states that the vermiform appendix is of unknown function, that it is found only in man, in the man-like apes, and in a marsupial animal, the wombat. It retains the embryonic characters of the large intestine, and is probably a rudiment of the enormous cecum of quadrupeds of the rodent type. Although thus structurally insignificant, its possible lesions may give rise to important clinical questions, and it is not infrequently a factor in retroperitoneal abscess. As a rule, the appendix is bent once upon itself, or twisted. It may be concealed beneath the cecum, or may hang down in the cavity of the pelvis, where it has been known to effect adventitious adhesions with the pelvic organs, and even to perforate the bladder. Rarely it is lodged under the ascending colon, or deflected so as to be in contact with the abdominal wall. Cruveilhier records an instance in which it was contiguous with the liver. Other writers have mentioned the possibility of the appendix being caught in the mesentery, or forming an ingredient of inguinal hernia.

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Leidy refers to the cecum as the broadest portion of the colon, and says it is a capacious sack, two or three inches in length and as wide as the greater length. It is pouched, like the rest of the colon, and at its inner back part is extended in a cone which is abruptly prolonged into a vermiform appendix. This is usually from three to six inches long, about the thickness of a goose quill, commonly turned upward, and after a variable flexuose course terminates in a blind, free, rounded end. At birth it is less abrupt at its commencement, and appears more evidently a continuation of cecum. It is peculiar to man and some of his nearest allies, the higher apes, but exists also in the wombat, an animal at the opposite limit of the same class. It is regarded as a rudiment of the greatly elongated cecum of most herbivorous mammals. Sometimes it is short, and rarely it is altogether absent. The cecum occupies the right iliac fossa, to which it is closely or more or less loosely attached. In the former case, it is covered in front and on the sides by the peritoneum reflected to the fossa, and is attached behind by areolar tissue to the investing fascia of the iliac muscle; in the latter case the peritoneum invests the cecum to a greater degree, and attaches it behind by a doubling called the mesocecum. A fold of the peritoneum also extends from the vermiform appendix to the adjacent extremity of the cecum, serving to retain it in a more fixed position.

Wiedersheim of Freiburg describes the processus vermiformus as a feebly developed organ which lies at the end of the short cecum, and possesses a considerable morphological interest. In man, its average length is 8.5 cm., but it may be but 2 cm., or on the other hand some 20 to 23 cm. long. Considerable variation also occurs in its width and disposition, and in the folds of mucous membrane, which bound its ostium. Indeed, everything points to the retrogressive character of this appendage, and justifies us in concluding that the total length of the alimentary tract was formerly greater than it now is. The great variations in the form and size of the cecum also support this view. According to the best authorities, the processus vermiformus at different ages measures as follows:

At birth	3.4 cm.
Up to 5th year	7.6 cm.
5 to 10	9 cm.
10 to 20	9.75 cm.
20 to 30	9.5 cm.
30 to 40	8.75 cm.
40 to 60	8.5 cm.
Over 60 years	8.25 cm.

In embryos and new-born children on the one hand, and in adults on the other, the vermiform process varies in length in proportion to that of the rest of the intestinal canal; and since it is a degenerating organ, it is not surprising to find that it is most strongly developed in fetal times, and does not grow at a rate proportionate to advancing age. In the embryo, its length in proportion to that of the large intestine, is approximately 1:10, and in the adult 1:20. Further light is thrown on these facts by Ribbert's interesting discovery of the frequent occlusion of the vermiform process. He found it either partially or totally closed in 25 per cent. of the cases examined, with accompanying very decidedly regressive changes—pathologic cases excluded—in the related tissues; actual pathologic obliteration nevertheless occasionally occurs at the end of the vermiform process. The occlusions which result, and which are probably always due to inflammation, are less frequent than the typical obliteration. I cannot in this connection refrain from referring to the coincidence of the existence of vestigeal organs and the tendency to disease caused by them.

Taking only adults into consideration—i. e., omitting individuals under 20 years of age, in whom variations are comparatively rare—out of 100 vermiform processes, 32 were found partially or wholly closed. Complete occlusion throughout the whole organ was found in a very small number—about 3.5 per cent. Partial occlusion is much more frequent, all degrees being found, from the first narrowing to the complete closing of the lumen. In rather more than half of the cases the occlusion affected a quarter of the length; in nearly half of the remainder its extent varied between one-quarter and three-quarters, and in only a very small number did it affect more than three-quarters, or close the tube.

This process of occlusion is equally marked in both sexes, and the statistics concerning its occurrence at different ages are very striking. They make it clear that there is a marked increase in the frequency of its occurrence in advanced age, as will be seen by the following table:

OCCLUSION OBSERVED.

1st to 10th year	in only 4 per cent.
10th to 20th year	in only 11 per cent.
20th to 30th year	in only 17 per cent.
30th to 40th year	in only 25 per cent.
40th to 50th year	in only 27 per cent.
50th to 60th year	in only 36 per cent.
60th to 70th year	in only 53 per cent.
70th to 80th year	in only 58 per cent.

It follows from the foregoing table, that in more than 50 per cent. of people over 60 years of age, there is degeneracy of the vermiform process. In new-born children, on the other hand, this phenomenon has never been observed, and the youngest child in whom it has been found commencing was 5 years old. Total occlusion is also similarly connected with age, though not in nearly so marked a manner as partial closure. It has never been observed before the thirtieth year; and while it was not found once in individuals between 50 and 60 years, it was most frequent in those whose ages range from 60 to 70. Among these, nine out of twenty-one cases recorded show complete occlusion; and since, besides them, there were seven just on the point of closure, we may conclude that more than 50 per cent. were thus affected. A relation has further been proved to exist between the length of the appendix, and its degeneration. The longest appendices—21 to 15 cm. long—kept their lumen throughout; in those 14 and 13 cm. long, commencing obliteration of the lumen was observed in four cases, and in those 12 and 11 cm. long, it was not found. From this point, however, occlusion again increased as the length decreased. If we leave out of account individuals under 5 years of age, in whom occlusions have not been observed, we find that it occurs as follows; viz:

LENGTH OF APPENDIX.

20 cm	34 per cent.
9 cm	18 per cent.
8 cm	32 per cent.
7 cm	40 per cent.
6 cm	30 per cent.
5 cm	70 per cent.
4 cm	66 per cent.
3 cm	100 per cent.

Although this connection between length and frequency of occlusion is, as the table shows, somewhat irregular, we may at least conclude that, as a rule, the shorter appendices show occlusion more frequently than the longer.

Richard Owen shows the striking resemblances existing among a large variety of animals. Speaking of the water-vole, he says that here the ilium terminates at the

base of the sacculate cecum, the slender termination simulates a vermiform appendage; the colon begins by a pair of large sacculi, but quickly contracts to the caliber shown. Two oval patches are here, as usual, situated on either side of the ilio-cecal valve. In the *Leporidae* they are lodged in a special pouch; the vascular mucous membrane of the cecum in these herbivorous rodents is augmented by being produced into a broad fold, disposed spirally to near the slender termination of the cecum, which is glandular, like the vermiform appendage in man. Speaking of the aye-aye, and describing the intestinal canal he further says that the small intestines are rather more than three times the length of the body; the cecum is about one-fifth that length; measuring two inches and seven lines; for the first inch it is 10 lines in diameter, but suddenly contracts to a diameter of three lines, terminating rather obtusely and resembling an appendix vermiformus, but this is not marked off by any valvular structure from the wider part of the cecum, and it is continued, as in the human fetus, directly from the end of the wider part, or cecum proper. This type of cecum is repeated in *Stenops javanicus,* with a larger and narrower vermiform termination. Again; in *Hylobates,* the vermiform appendage reappears; it is terminal, and in some species short; but is more differentiated as such by its glandular tunic and marked commencement than in *Lemuridae;* the appendix is terminal, but is long and convolute in the orangs; in the chimpanzees there is a more marked constriction between the appendix and the cecum. The colon is sacculated and moderately long in all *Catarhines;* it is loosely suspended by a broad mesocolon, and only in tailless apes does the cecum begin to adhere, through an incomplete peritoneal investment to the right hypogastric region. Again: in a binturong I found a cecal projection, probably a vermiform process, of half an inch in length at the beginning of a large intestine, two feet in length; the small intestines are seven feet long; the length of the animal, exclusive of tail, was two feet.

Gray says that, starting from what was originally the apex of the tube, the inner and back portion of cecum, usually 1.7 cm. below the iliocolic opening, is a famous narrow, round part of the intestine called the appendix cœci, or, on account of its worm-like appearance, appendix vermiformis. This is first seen low down among the mammals, in the marsupial group, in the wombat. No sign of it again appears until the ichneumon and pig are reached, but not then is it a proper appendix. It is next seen in the lemurs and higher apes, as chimpanzee, orang, gibbon and gorilla. Finally, in man, it is present as a functionless and dangerous structure. It attains its greatest length between the twentieth and fortieth years. Its length, compared to that of the large intestines, is 1 to 10 in the new-born, 1 to 20 in the adult. There is no relation between the size of the cecum and the length of appendix. The appendix has no set position. Treves considers it to pass most frequently up from behind the cecum to the left, behind the ilium and mesentery toward the spleen. Others regard this position as nearly abnormal.

Turner of Russia finds it hanging into the true pelvis in 51 out of 83 cases, and transversely across the promontory in 20 more of these cases. Berry gives the order of frequency as: 1, pelvic position; 2, retrocecal; 3, internal cecal—toward spleen; 4, variable.

The order of frequency found in this country by Joseph D. Bryant was most often inward; then behind the cecum, downward and inward, into the true pelvis.

According to Ribbert and Zuckerkandl, the cavity of the processus vermiformis tends to undergo obliteration, not as a pathologic process, but a physiologic one. In children the lymph follicles of the appendix are very numerous and close. After the twentieth or thirtieth year, it is normal for them to atrophy.

Obliteration of the process occurs to some degree in 99 cases out of 400, or 25 per cent.; total obliteration in 3.5 per cent. (Ribbert). Or obliteration occurred in 23.7 per cent., total obliteration in 13.8 per cent. and partial—distal half most common—in 9.9 per cent. (Zurkerkandl). It never occurs in the new-born. After 60 years of age, more than half are obliterated. It occurs more often in a short process, 5 to 6 cm. long. One can never tell by macroscopic appearance as to the presence of obliteration. There are four authentic cases of absence of the appendix on record.

Charles Darwin, speaking of the rudiments, says: "With respect to the alimentary canal, I have met with an account of only a single rudiment, namely: The vermiform appendage of cecum. The cecum is a branch or diverticulum of the intestine, ending in a cul-de-sac, and is extremely long in many of the lower vegetable-feeding mammals. In the marsupial koala, it is actually more than thrice as long as the whole body. It is sometimes produced into a long gradually tapering point, and sometimes constricted in parts. It appears as if, in consequence of changed diet or habits, the cecum had become much shortened in various animals, the vermiform appendage being left as a rudiment of the shortened part. That this appendage is a rudiment we may infer from its small size, and from the evidence which Professor Canestrini has collected of its variability in man. It is occasionally quite absent, or again is largely developed. The passage is sometimes completely closed for half or two-thirds of its length, with the terminal part consisting of a flattened solid expansion. In the orang this appendage is long and convoluted; in man it arises from the end of the short cecum, and is commonly from four to five inches in length, being only about a third of an inch in diameter. Not only is it useless, but it is sometimes the cause of death, of which fact I have lately heard two instances: this is due to small hard bodies, such as seeds, entering the passage and causing inflammation.

Of course at the time this was written, it was the common opinion that appendicitis was always caused by the presence of some foreign body in the lumen of the appendix.

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[The foregoing is one of a series of six papers on Appendicitis. The discussion will follow the last paper of the series.]

"In December, 1890, I objected to two imported Guernsey cows being placed in a stable where 28 milch cows and calves were kept. This because I suspected tuberculosis. In December, 1891, I stood by and saw 22 of the 28 slaughtered, and shown to be tubercular." (Letter from J. E. Storey.)

THE UTERUS.*

SPONTANEOUS RUPTURE OF ITS BODY DURING LABOR.

BY HENRY D. INGRAHAM, M.D.

BUFFALO.

Rupture of the body of the uterus during labor, for any cause whatever, is fortunately of rare occurrence, at least in this country.

Garrigues estimates it as occurring in the ratio of 1 in from 3000 to 5000 cases; Harris as 1 to 4000, and Lusk as 1 to 6000 cases. In Continental Europe it is reported as occurring more frequently, for Winckell found it in the proportion of 1 to 666 cases. This average is above that given by many writers, however.

Charpentier, in his "Cyclopedia of Obstetrics," estimates that in more than 3,000,000 cases of labor reported by thirty different writers, rupture of the body of the uterus occurred once in from 2000 to 4000 labors. As all cases of rupture may be classified either as traumatic, that is, resulting from manual or instrumental injuries, or as spontaneous, that is, occurring without any such injury, it would be of interest to know in what proportion of each Charpentier's cases are divided, but this point he does not state. No doubt many cases of rupture are not reported, and it is very natural that a smaller proportion of the traumatic cases should be reported than of those which occur spontaneously.

In investigating this subject, by making inquiries of several of the more prominent obstetricians of Buffalo, I find that in an aggregate of about 48,000 cases of labor, 12 cases of ruptured uteri have occurred, 5 of these being traumatic, and 7 spontaneous; that is, rupture from any cause occurred once in 4000 cases, while spontaneous rupture occurred once in 6857 cases of labor.

Most of the cases of traumatic rupture of which I have any knowledge occurred in the practice of midwives, and were due to their efforts to deliver the patient when the child's position was abnormal. In two cases the midwife attempted to deliver in a shoulder presentation by pulling on the child's arm; while in two other cases the rupture followed attempts at version without chloroform. In all these cases physicians were finally called, but the patients were either dead or moribund.

But the scope of this paper is to deal especially with those ruptures which have occurred without interference from anyone, that is, those which have been designated as spontaneous. In illustration, I would call your attention to the cases somewhat in detail.

CASE 1.—This case occurred more than thirty years ago, in the practice of Dr. John Hauenstein. Being a young man not long in practice, and having more faith in the instruction of teachers at that time than he had in later years, he drove six miles to attend a confinement without taking his forceps. The patient was 40 years of age—a primipara. Labor progressed slowly but naturally for several hours, when the pains became severe and somewhat irregular in character. The head not engaging, the doctor sent for his forceps, but before he could get them the uterus ruptured and the patient died in a few minutes from hemorrhage. From that time Dr. Hauenstein always took his obstetric forceps with him and was as skilled in their use as any obstetrician who has lived in Buffalo. This case, the only one of the series ever reported, appeared in the *Buffalo Medical and Surgical Journal*.

CASE 2.—This case occurred in the practice of the late Dr. Storck. The patient was 38 years of age—a multipara, whose three previous labors had been normal, but protracted. In this case labor progressed slowly, with pains moderate for several hours, then gradually increased in strength, becoming severe, but making little progress, owing to the fact that the head did not engage. Dr. James Smith, who was sent for to assist, answered the call at once but just before his arrival rupture took place and the patient died almost immediately. With the exception of one foot the entire child was expelled into the abdominal cavity.

CASE 3.—Twenty years ago Dr. Earl was engaged to attend Mrs. M., Irish, 40 years of age, with her seventh labor. Five of her six previous deliveries had been by forceps, and one was a craniotomy. At about 8 p. m. he received an urgent call, as the patient was in very severe pain, and had been for some time. On his arrival he found a man in attendance and was told that he was a friend of the family—a druggist. He said that he had neither given any medicine nor examined the patient; and left soon after Dr. Earl's arrival. The doctor found the cervix well dilated, head engaged, and pains strong, though irregular. Suddenly all pain stopped. The patient did not complain of anything unusual, the pulse and appearance were normal. The doctor applied the forceps, and easily delivered a healthy living child. The placenta was soon expelled—the uterus contracted well. By this time Dr. Earl learned that the family friend, the druggist, had been there all day, had made several examinations, some of the latter ones giving the patient severe pain, and had given more than an ounce of fluid extract of ergot. Dr. Earl remained with his patient an hour after delivery, and left her cheerful and apparently in a normal condition. Soon after he went home he was recalled, as the patient was "very bad." When he reached the house the woman was dead, although no signs of either internal nor external hemorrhage could be discovered. This sudden, unexpected and unexplainable death caused much comment, doctor and druggist blaming each other. Two or three days after burial the body was disinterred, and upon post-mortem examination a transverse rupture of the uterus just above the utero-vaginal junction was found, but no internal hemorrhage. All other organs were normal. Suit was brought against Dr. Earl, but the profession came to his rescue, and he was fully exonerated. The druggist left the city during the trial, and has never returned.

CASE 4.—This case occurred in the practice of a midwife. The patient, a Pole, 35 years of age, multipara, had been in labor several hours. Prof. P. W. Van Peyma was called, but when he reached the house the patient was dead from a profuse external and internal hemorrhage. Although the Doctor immediately opened the abdomen, at the request of the attending priest, the child was dead when delivered. The midwife said she had not given ergot, nor attempted version, nor interfered in any way. Dr. VanPeyma knew her well and considers her truthful.

CASE 5.—This case also occurred in Dr. Van Peyma's practice. He was called by a midwife to see a Polish woman about 32 years of age, a multipara, who had been in labor several hours, the pains being especially severe for some time. It was a vertex presentation, and after careful examination the Doctor decided to do a version, but found it necessary to get a physician to give the anesthetic. During his absence the patient got up, walked about, suffering from very severe pains. Upon his second examination, Dr. Van Peyma found that the

*Presented to the Section on Obstetrics and Diseases of Women, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

head, which he was unable to move before, had receded and was now freely movable. Immediately applying the forceps he delivered the patient of a living child, and then introducing his hand to remove the placenta he found a rent in the uterus, through which at least one-half of the placenta had escaped. This case occurred in the early days of the use of bichlorid of mercury, and the doctor washed out the uterus with a 1-2000 solution until he found that it was entering the abdominal cavity. On the second day the patient complained of considerable abdominal soreness and tenderness, and there was a slight rise in temperature. However, the Doctor was told that she did not wish further medical attention, so that he personally did not see her again, but one week from the day of her delivery he sent the assisting physician to inquire how she was. The patient, who was out of doors, told him that she was perfectly well.

CASE 6.—This case was reported by Dr. Schroeter. About four years ago he was called by a midwife to see a Polish woman, 30 years of age, who had been in labor for several hours. The pains not accomplishing much, the midwife had given considerable ergot, how much the Doctor could not learn, but enough to cause irregular contractions. The woman had previously given birth to three children, each by forceps delivery. Before the Doctor's arrival the woman had a sharp, severe abdominal pain and lost a large amount of blood. Upon examination he felt the child's head high up and freely movable. He easily delivered a dead child with forceps, but when examining the placenta he discovered that the larger part had escaped through a tear of the uterus into the abdominal cavity and could be felt externally. This was extracted after some little difficulty, and the hemorrhage ceased. The patient died the next day.

CASE 7.—On the morning of Nov. 6, 1896, the writer was sent for by Dr. F. A. Harrington, with the request that he bring his long forceps, and also the instruments necessary for abdominal section. The patient was an Italian, 23 years of age, rather short and stout, the mother of two children, both of whom had been delivered by Dr. Harrington after normal but tedious labors. On November 4, the Doctor was called at 8 p. m., but finding the pains slight and cervix very little dilated, he gave ¼ grain of morphin and went home, instructing them to call if necessary. On the 5th, after calling several times, he went at 1 p. m., and remained. The pains from this time on were severe. It was a right occipito-anterior presentation, but even with complete dilation, the head did not engage. Neither patient nor friends would allow forceps to be used until 5 p. m., when the doctor refused to wait longer. While he was in an adjoining room sterilizing his instruments the patient got out of bed and sat over a pail of hot water to relax the parts. Just as Dr. Harrington entered the room she gave a scream, put her hand over the right iliac region, became pale and vomited. She would have fallen had she not been assisted to the bed. Upon examination the doctor felt the head, but higher than previously. Attempting to apply the forceps he could not feel the child's head. Introducing his hand still further, he could only find a foot. He immediately sent for Dr. Willoughby, who agreed with Dr. Harrington that a rupture of the uterus had occurred, with escape of the child into the abdominal cavity. There was no external hemorrhage, nor any symptoms of internal bleeding. Under stimulation the patient rallied, and it was advised that she be removed to a hospital. To this proposal both the patient and her friends objected, an Italian midwife strongly insisting that if she were alone she would be all right; that she had had similar cases, all of whom had recovered. The patient was given two doses of morphin, ¼ grain each, during the night, and was fairly comfortable. When I saw her at 9 a. m. on the 6th, she had an anxious expression of countenance, pulse 150, weak and feeble, respiration 40, and temperature 101; not in much pain, with pupils contracted, showing her to be under the influence of the morphin. Upon examination, one foot of the child could be felt in the uterus, and through the abdominal walls the rest of the body could be found in the right inguinal region. It was evident that an operation was useless, but to prevent having any one called who might from her condition blame her medical attendant it was suggested that she be freely supported with strychnin and whisky, and if she were in condition we would operate in the afternoon. The friends were, however, given to understand that there was little hope of improvement and that they were criminally negligent for refusing operation immediately after rupture. A little before 3 o'clock that afternoon the patient died. Although objecting to a post-mortem, the friends wished us to make an incision and remove the child. It was a male weighing about ten pounds, and normal in shape. In the abdominal cavity just under the child were the placenta and membranes, with not more than two ounces of blood. The uterus was firmly contracted and the tear quite short; two-thirds of it was on the right of the median line, the left end being a little above the uterovesical junction and the other end curving slightly upward toward the fundus. The intestines and the peritoneum were dark in color, the vessels much engorged, showing that the inflammatory process had been unusually active during the twenty-two hours since the uterus ruptured. Although the pubic arch in this patient was slightly flattened, yet she had previously given birth to two children of about the same size and shape as this one, with neither instrumental nor manual interference. For the past few months she had increased in flesh, so that it is possible that there was a fatty degeneration of the uterus.

An analysis of the above cases shows that both mother and child died in all the traumatic cases, while in the spontaneous variety this mortality was 86 per cent. of the mothers and 71.5 per cent. of the children; also that rupture occurs more frequently in our foreign-born than in our native population. Only two of the cases reported were born in this country, and the birth of one of them was soon after her people came here. Doubtless this is partially accounted for by the fact that a large proportion of the foreign-born population of this country employ midwives. Although the American population of Buffalo is larger than the foreign-born, yet the birth-rate among the foreigners is much greater than among the native. We have quite an Italian population, and a very much larger Polish settlement, and nearly all these people, as well as the Germans, employ midwives, so that more than one-half of the births of the city are attended by them. Another very probable cause is the greater frequency of contracted pelves among the foreign-born element.

No doubt some of the cases of sudden death after confinement when the cause is unknown are due to ruptured uteri. Case 3 is an example. While others who die in a short time from septicemia may have a rupture of the uterus as the predisposing cause, the condition, however, is less frequent now than formerly, owing to the advances made in obstetric technic. Most of the cases reported occurred years ago. It is a fact well known to the older members of the profession that the

practice of obstetrics has changed greatly in the last twenty-five or thirty years. Now a physician does not leave his obstetrical bag at home, for fear that he will not be able to resist the temptation to use the forceps before he ought; and when labor is not sufficiently rapid to suit his convenience he does not give ergot freely until the contractions become severe and irregular. It was fortunate for the comfort as well as for the safety of women that much of the ergot formerly used was inert. Perhaps the same may be said of that in use to-day.

Had ergot not been given, and had forceps been applied at the proper time doubtless a majority of the cases mentioned might have been saved.

DISCUSSION.

DR. JOHN M. DUFF, Pittsburg.—I think perhaps in the past we have had more cases of rupture of the uterus than have been reported, and undoubtedly it is so at the present time. Last year I was called to see a woman about the ninth day after confinement, and, unfortunately, when I arrived she was dead. I succeeded in getting an autopsy. A complete rupture of the uterus was found, so that my hand passed through it readily.

About six months ago I was telegraphed for one morning to come to the office of a physician. I went as soon as I could, and arrived there about one o'clock in the afternoon. The Doctor was upstairs in bed at the time; he came down, and I asked him the nature of the case he had, and he said he believed it was a case of rupture of the uterus. The woman resided several miles from the home of her parents; she was afraid to trust the Doctor there, and came to this town to have her baby. The Doctor was called at nine o'clock the night before, and found a breech presentation. The pains were violent. Several attempts were made to extract the child, but failed, and a prominent physician in that section of the country was sent for. Dr. No. 1 gave the anesthetic, and Doctor No. 2 made an attempt to deliver the body of the child, but after delivering the body he found the child was headless. He had attempted to deliver the head with forceps, but could not do so. Dr. No. 3 did a craniotomy to deliver the head, and it was said that the placenta came away immediately after the delivery. The woman was put to bed, and the Doctor made his visit in the morning and on examination found some coils of intestine in the vagina. It was then that they telegraphed for me. I examined the woman and found a coil of intestine in the vagina. I could not do anything for the case there, and said it would be necessary to have the woman taken to a hospital. The family objected, and so did the woman. The patient said she felt first-rate, but I insisted on her being taken to a hospital. She went to the hospital; I opened the abdomen and found several feet of dead intestines, which I removed, and put in a Murphy button. Continuing my examination, much to my surprise I found the uterus had been torn off and cut from the vagina and completely absent. There was no hemorrhage; the woman was in good condition apparently; I washed out the abdomen, and as one of the sponges was not found immediately, I began to feel around to see if I could find it in the abdominal cavity, and I reached under the spleen, felt something, pulled it down, and it was the placenta. It was the uterus that came away immediately after the head instead of the placenta. I have narrated this to you, believing that it is worth reporting, and you will understand why I do not use names. The woman died twenty-four hours afterward.

DR. JAMES F. BALDWIN, Columbus—I have seen four cases of rupture of the uterus in consultation. Of the four cases three were native-born, the other being a foreigner, who had a contracted pelvis. In one case, separating the point of rupture was a small fibroid, this case seemingly being the least hopeful of all of the cases on account of sepsis, the woman having been in labor for a week. The other three women promptly died before the day of operation. One was a case similar to that narrated by Dr. Duff, except that the uterus was not torn away, the woman having died before she was sent to the hospital. I saw the report of a case operated on by Dr. Branham, in which prompt recovery followed, although the woman was almost moribund at the time of operation. In one of my cases I believe if the woman had been brought to the hospital earlier there would have been a possible chance for recovery.

DR. INGRAHAM, closing the discussion—I believe rupture of the uterus occurs very much more frequently than we are led to suppose. I am pretty sure it does in Buffalo. More than half of the obstetric cases attended by midwives, after severe labors, seem to die in a mysterious manner, and we do not know why. No autopsy is made, and I have no doubt many patients die of rupture of the uterus.

THE SUSPENSIO-UTERI LIGAMENT*.

ITS STRUCTURE.

BY J. WESLEY BOVEE, M.D.

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The subject of uterine displacements has already caused a wonderful amount of discussion, and to this day it is as prolific of animated debate as any subject in gynecology. This paper does not deal with the causes and milder forms of treatment of such malpositions of that organ. Nor do we intend to compare the different surgical measures for relieving such conditions further than to say that ventro-suspensio-uteri and ventro-fixatio-uteri leave an exceedingly small field, indeed, for all other major operations in the treatment of the posterior variety of uterine displacements. After employing them in a few hundred cases and resorting to other operations in a smaller number of cases, the writer is forced to this deduction.

As ventrofixation and ventrosuspension are to-day practiced their difference is only one of degree. It is simply a matter of combat between the resisting property of the new ligament or attachment and the forces combined against it. The habits, customs, mode of living and other conditions in the lives of the patients have a very strong bearing upon the results of these operations. And the conditions vary from ventrosuspension for mild retroversion to firm ventrofixation for exaggerated uterine prolapse.

History.—Attachment of the uterus to the anterior abdominal wall by means of suture was done thirty years ago. Dumoret[1] says that Koeberle first did hysterectomy in 1869 for retrodeviation, and that Kaltenbach fixed the uterus to the abdominal wall in 1876 for prolapsus uteri. In 1877 Koeberle[2] removed the uterine appendages, raised the uterus from Douglas' pouch, and successfully sewed the appendage stumps into the abdominal incision. In his most excellent paper on this subject, Charles Carroll Lee[3] says: "In February, 1880, Mr. Lawson Tait operated on a case of ovaritis complicated by persistent retroflexion, in which after removing the appendages and while closing the wound, he passed a stitch through the fundus uteri and fastened it up to the abdominal wall." And further, of Tait's work, he quotes, "In another similar case of chronic interstitial ovaritis complicated by fundal metritis and retroversion he repeated the same experiment, April 9, 1880. Both patients recovered and in both the uterus remained in situ."

To Professor Olshausen is due the credit of first urging ventral attachment of the uterus for vicious displacements of that organ.

In his paper[4], read in Berlin in September, 1886, he recited cases he had operated on and so strongly urged the operation that it was soon adopted by other Germans. One of his operations was for excessive prolapse and the other for retroflexion and adhesions. Both had resisted all known methods of treatment, and the operation in the case of prolapse failed as well. In the discussion of his paper it was found that a number of surgeons had been doing the same work. Bardenheur had done several in 1880. Olshausen advised the use of several sutures to

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affix the uterus to the abdominal wall, passing them either through the cornua of the uterus or through the broad ligaments in such manner as to cause them to encircle the round ligament—and the Fallopian tube as well, if after the menopause. This multiple suturing was employed by all his immediate followers. Terrier[5] and many others sutured from the fundus down to the bladder in ventrofixation, using coarse buried silver wire and silkworm gut. Some surgeons in this country were at this time fixing the fundus to the abdominal wall when removing the appendages. The methods employed by these operators were nearly as many in number as were the surgeons operating, so that for seventeen years ventrofixation, primary and secondary, was practiced to a greater or less extent, and all these operations had in view the firm permanent attachment of the uterus to the abdominal wall.

It remained for Dr. H. A. Kelly, in 1885, to devise an operation for temporary ventrofixation of the uterus that permits this organ to acquire its normal mobility, and position or plane in the pelvis, thus removing the feature that caused trouble in the pregnant state. This operation was correctly named by him "Ventrosuspensio uteri." Even here considerable modification has been made by him regarding the points of the uterus to be attached to the abdominal wall. The plan he has finally adopted is to pass the sutures through the posterior wall of the uterus slightly below the level of the junction of the round ligaments and uterus. The writer believes this to be the best possible position. The result is that the uterus, after some months—the time varying according to the degree of primary fixation and the future conduct of the patient—drops downward to its normal distance from the abdominal wall and remains attached by a strong ligamentous cord. Kelly says: "The distance between the uterus and the anterior abdominal wall is about one or one and a half inches. The organ is attached by a strong fibrous cord which contains the sutures close to the abdominal wall." He objects to passing the sutures to much depth in the uterine wall, but this point is not followed by all operators.

The writer has been anxious to have this new cord microscopically examined and a suitable case presented itself last year. Dr. Kelly had operated for "falling of the womb," as the patient expressed it, in 1894, and I had to do a section for other conditions four years later. The case history is as follows:

Mrs. A., white, 28 years of age, living apart from her husband and in very bad company, consulted me in October, 1898, offering the statement that she had bad health, said to be due to falling of the womb, and had been operated by Dr. Kelly in 1894, he doing some kind of abdominal operation. One year later she had a child without unusual difficulty and remained well until less than a year ago. She admitted having lived a rather fast life during the past year and had suffered from pelvic trouble, which had confined her to bed a considerable part of the past two months. Upon her person were found a hypodermic syringe and several morphia tablets, the admission was secured of her being addicted to taking grain doses of that drug, self-administered with the syringe. On her abdomen, just above the pubes, was found a scar of a former median incision about two inches in length, and an examination revealed a large fluctuating mass filling the pelvis. Operation was done October 24, 1898, assisted by Dr. W. C. Borden, major and surgeon, U. S. A. Double pus-tubes were removed, and cystic ovaries, severely lacerated in separating their adhesions, were also removed. The section was made through the right rectus muscle and when the pelvic contents were exposed to view about the first structure to attract my attention was a round, red cord about one-eighth of an inch in diameter and about two inches long, attached to the uterus, approximately half an inch below and the same distance to the right of the junction of the uterus and left Fallopian tube, and to the lower end of the scar of the former abdominal section. This structure, undoubtedly the result of a former ventral attachment of the uterus to the abdominal wall, was continued through the parietal peritoneum into the fascia. It was removed for examination and at the ends a piece of the uterus and of the abdominal wall. The wounds in the uterus and belly wall were sutured and ventrofixation done. Dr. Borden took the specimen for examination and his report follows. Dr. Kelly has since advised me that his operation was ventrosuspension:

Macroscopic Appearance.—The ligament was 4 cm. long, of greatest diameter at the ends, the center being about 3 cm. in diameter.

Microscopic Appearance.—Longitudinal and transverse sections showed an exterior peritoneal covering, subperitoneal connective and adipose tissue, central bands of connective tissue and blood-vessels.

The peritoneal covering resembled in every way the serous coat of the peritoneum. The subserous connective and adipose tissues were small in amount and extended inward between the central bundles of connective tissue. Small blood-vessels ramified in this connective tissue. The major part of the interior of the ligament was made up of quite large, longitudinally disposed bands of white fibrous tissue, with longitudinally placed, spindle-shaped nuclei. No nonstriated muscle fibers could be discovered.

I was disappointed that a few fibers of involuntary muscle were not found in the uterine end of the ligament—not alone that there was some use for it in this ligament, for the permanency of the structure would be more likely with a few bundles of muscular tissue, but during the latter months of pregnancy its yielding would be more satisfactory, as would its involution during the same change in the uterus. As this operation is comparatively an experiment we do not yet know its results after a long term of years. The ligament is not like the others of the uterus. In some cases it has been found to have reached the length of several inches within the first two years after operation. In these instances, however, the operation was probably abused, as the ligamentation of the uterus or the pelvic floor was very faulty and such faults were not corrected. In this way improper cases were selected for this operation, and the selection and not the operation was faulty. Such cases, nevertheless, serve to demonstrate the stretching property of this ligament—a property not relatively compensated for by its elasticity. It is by no means certain that it returns to its former dimensions after full-term labor. In a few cases we have found it has done so and in the one herein reported it had not suffered by the labor of pregnancy. In some others we have found it quite slack after labor. However, its use is not for all time, and often, no doubt, its existence is necessary for but a few months, the natural uterine supports regaining their function in the meantime. The absence of muscular tissue from the suspensio-uteri ligament is probably due to that kind of tissue having greater resisting power than fibrous tissue. As the operation is properly performed the parietal peritoneum and a certain amount of the fascia are sutured to the serous covering of the uterus, the sutures passing slightly into the muscular tissue of that organ.

These sutures are constantly pulled downward, and

the abdominal attachment gradually yields, thus forming the structure known as a new ligament. The uterine muscular tissue does not yield to the continuous tension, and consequently none of it enters into the formation of this cord. The inclusion of a very small amount of the muscular tissue of the recti abdominales in the fixation sutures would convert the structure of this ligament to nearly that of the normal ones of the uterus. I am by no means sure that this is a reliable procedure, or would be at first, but comparative permanency of the ligament would be insured in this way, and its utility would be prolonged to any desired extent. During the past few months the author has adopted this plan in a number of cases, one of which was in early pregnancy and in danger of abortion from posterior displacement with fixation.

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CHOLECYSTECTOMY.*

BY CLINTON CUSHING, M.D.

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For the purpose of this paper it will be assumed that the gall-bladder is not necessary to the health or well-being of the individual, for many cases are now upon record where the gall-bladder has been removed and the patients remain in perfect health.

That this should be so is quite reasonable when the anatomy and physiology of the bile passages are examined. The liver secretes in a person of average size about forty-two ounces of bile in twenty-four hours, or in other words, as much bile as urine. This bile passes off into the pylorus through the hepatic and common ducts, while a very small quantity, possibly half an ounce, backs through the cystic duct into the gall-bladder. So far as I am aware, no one has shown that the gall-bladder performs any physiologic function.

Birch and Sprong report, in the *Journal of Physiology*, that in two patients upon whom the operation of cholecystotomy had been performed, a fistula forming as a result of the operation in each case, they were able to collect what appeared to be the normal secretion of the gall-bladder. In amount the secretion was something over 20 c.c. in twenty-four hours; it is usually quite clear and contained no bile at all, owing to the occlusion of the cystic duct.

The reaction was distinctly alkaline, and the exhaustive chemical examination showed that the secretion of the gall-bladder contains no bile salts, or biliary pigments. Physiologically it was shown not to have any diastasic or emulsifying action.

It cannot, therefore, be of any digestive value. On the contrary, in certain animals—the horse, the deer, and the elephant—the gall-bladder is normally absent. It would appear then, that, like the vermiform appendix, whatever may have been the importance of the gall-bladder in the animal economy, evolution has so altered its function as to make it no longer necessary.

My first cholecystotomy was made fifteen years ago, and was done in the usual manner; the gall-bladder enlarged, inflamed, and bound down by adhesions was, after separation of adhesions, drawn up to the abdominal incision and stitched there; a small handful of gall-stones were removed through an incision in the bladder, an inch in length; a drainage-tube was introduced and recovery was uneventful.

At the end of two years a return of the symptoms necessitated the reopening of the abdomen, the removal of more gall-stones and the removal of the gall-bladder itself; after which the patient remained well. In all my other operations for cholelithiasis, six in number, I have removed the gall-bladder by ligating the cystic duct, removing the bladder, and treating the stump as after removing the appendix vermiformis. All made easy recoveries, except one, who had a slight biliary fistula for ten days, and which closed without trouble. So far as I have been able to follow the histories of these cases, subsequent to the operations, no untoward symptoms have developed, except one, a woman over 50 years of age, on whom I operated in January, 1898. I recently received a letter from her, detailing her symptoms, and it is probable that malignant disease is developing in the region of the liver. Should this prove to be so, it is doubtless a coincidence.

The indications for a surgical operation upon the gall-bladder or the biliary passages has been very ably set forth by Mayo Robson, in the London *Lancet*, for May, 1897. He says: 1, "recurring attacks of biliary colic, with or without jaundice, and whether the gall-bladder is enlarged or not;" 2, "enlargement of the gall-bladder, whether there be pain or not;" 3, "persistent jaundice which was preceded or accompanied by pain in the region of the gall-bladder, with or without paroxysms resembling ague;" 4, "empyema of gall-bladder, or peritonitis in gall-bladder region;" 5, "abscess in region of gall-bladder;" 6, "rupture, fistula or wounds of gall-bladder."

In any one of the above conditions where there is serious danger to life, or marked suffering, the question of an exploratory incision should be considered, for a positive diagnosis is difficult, or impossible, in a large proportion of cases, until the abdomen is opened, for the gall-bladder, unless decidedly enlarged, cannot be palpated in its normal position.

The diagnosis of a diseased gall-bladder, then, will depend upon the existence of local pain and tenderness, reflex pain in right shoulder-blade, coupled with the existence of gastric troubles and jaundice, where there is obstruction of the hepatic, or the common duct of the liver. As all are aware, gall-stones may remain in the gall-bladder for years without producing any symptoms, but I doubt not they cause cholecystitis much oftener than is generally believed. What leads me to this conclusion is the fact that in two of my seven cases, the bladder walls were greatly thickened: in one case fully one-fourth of an inch, and contracted firmly about a row of gall-stones up the center like peas in a pod. In another, in addition to thirty gall-stones, the bladder was so distended by the secretions of the viscus that it felt like a piece of wood and was of a dark red color. In still another, in addition to firm adhesions, clearly the result of peritonitis, there was a considerable deposit of cheesy material on the adjacent peritoneal surface.

In two of the cases the abdominal incision was partly exploratory. Both patients had been under careful and intelligent management for several months, but had irregular fever and chills, gastric pain, indigestion and marked emaciation; the symptoms finally leading to the conclusion that there was somewhere in the body a collection of pus, probably about the pelvis. In both cases the abdomen was opened below the umbilicus, and with the hand and arm in the abdominal cavity, every organ was thoroughly and carefully examined. Noth-

*Presented to the Section on Obstetrics and Diseases of Women, at the Fiftieth Annual Meeting of the American Medical Association, held at Columbus, Ohio, June 6-9, 1899.

ing abnormal was found except the cholelithiasis and some local peritonitis. The opening below the umbilicus was closed and an opening made parallel with the lower edge of the ribs, and the gall-bladder with its contents removed. The fever and other symptoms at once disappeared, and the patient afterward remained well.

If, then, the gall-bladder is so seriously diseased as to warrant a surgical operation for its relief, it is better practice to remove it in toto, than to leave it as a place for the further accumulation of gall-stones, or as a point for the setting up of new inflammations. Like the vermiform appendix, the gall-bladder is a cul-de-sac, and having been once diseased, if the patient lives, is likely to become diseased again, unless removed; indeed, the same argument applied to the Fallopian tube, for when the fimbriated extremity of the tube becomes closed by inflammation, it constitutes a cul-de-sac opening into the uterus and is prone to the formation of pus, or mucopurulent material.

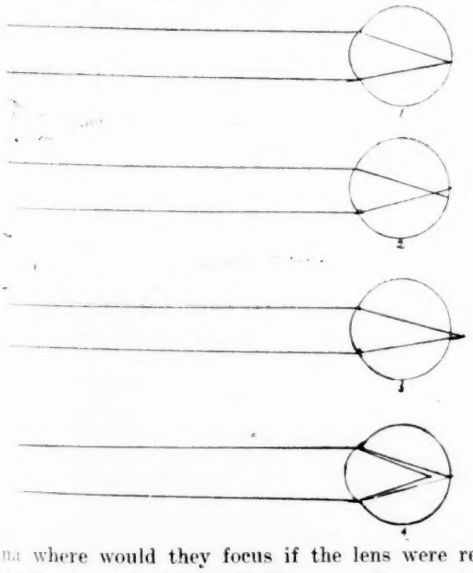
When we open the abdomen for the relief of salpingitis, a pyosalpynx, or an appendicitis, do we leave the diseased organs in situ? Certainly not. There is one condition in which the gall-bladder should not be removed. If for any reason the common duct or the hepatic duct below the junction of the cystic duct becomes strictured, or obstructed by morbid growths, or otherwise, so as to prevent the passage of the bile into the intestines, then it might be possible to attach the gall-bladder to the pylorus and thus utilize the cystic duct and the gall-bladder to carry the bile into the intestine.

Correspondence.

Misleading Statements and Illustrations in School Physiologies, Physics, and in Text-Books on Diseases of the Eye.

KANSAS CITY, July 21, 1899.

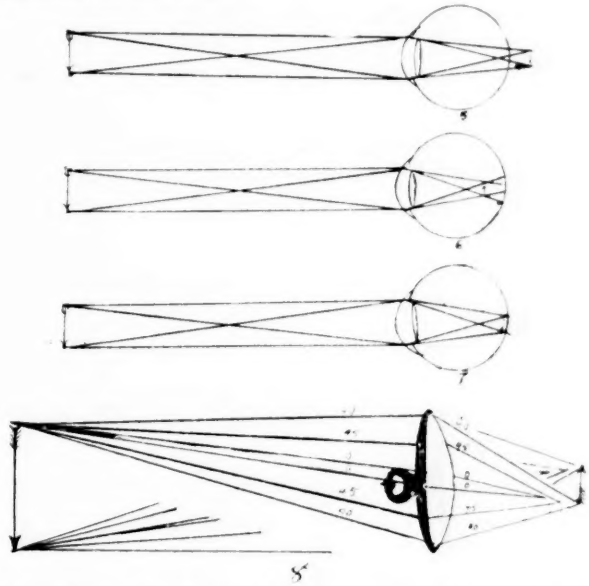
To the Editor.—If parallel rays of light focus on the retina and the image is inverted, why is the image not reinverted in myopia where the rays cross before they reach the retina; does the image of objects focus at a point as it seems to do in Figure 1; and if the crystalline lens brings rays of light to a focus on



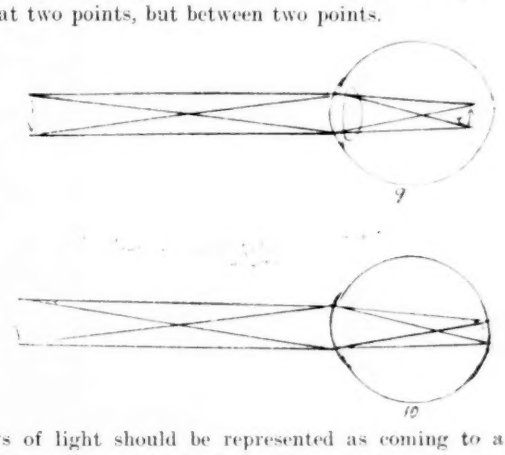
the retina where would they focus if the lens were removed, and would the image be inverted? These are the questions students ask after seeing the statements and illustrations in the various text-books.

Most text-books contain an illustration correctly showing the manner in which rays of light reach the retina, and many that are incorrect.

As far as I know Figures 1, 2, 3 and 4 are the ones used the world over to illustrate errors of refraction, and they are all incorrectly drawn, and consequently misleading to teachers and students. I am of the opinion that the above illustrations ought not to appear in any text-book. If errors of refraction were represented as in Figures 5, 6, 7 and 8, writers would not be tempted to make use of the expression that parallel rays of light focus on the retina.



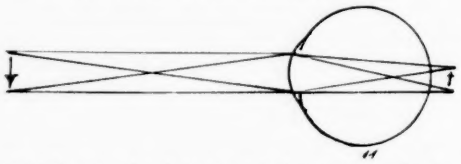
It can be readily seen by such illustrations that parallel rays do not focus on the retina, that the image is always inverted, no matter what the refractive error may be, and that the images of objects are not focused at a point, as represented in Figure 1. It would be well to represent astigmatism, as in Figure 8, where rays of light which strike the cornea in the perpendicular meridian are focused the farthest back, and those striking the horizontal meridian would be focused nearest to the cornea while those striking the oblique meridian, lines marked 45, would focus between the two points. Students would not then get the impression that in astigmatism rays of light focus at two points, but between two points.



Rays of light should be represented as coming to a focus from the cornea instead of the lens. It is more correct to represent it so, for it requires a lens of 40 diopters to bring rays of light to a focus at one inch, and the lens has only the converging power of 10 diopters. Readers would not then be led to think that rays were scarcely refracted at all, when the lens was removed. Would it not be well to represent a highly myopic eye and one where the lens had been removed, as in Figures 9 and 10, to show that in such eyes rays of light focus near the retina where the lens is removed?

Figure 11 represents rays of light coming to a focus at a

little more than an eighth of an inch back of the retina in a normal eye where the lens has been removed—which is the condition after a cataract has been extracted.



The text-books on physiology and elementary physics, used in the public schools, also teach that parallel rays of light focus on the retina in the normal eye, in front of the retina in myopia and behind it in hyperopia. Students believe the statements in their text-books to be true and the illustrations correctly drawn. They can come to no conclusion other than that the images of objects are made to focus at a point, and, according to the illustrations, the image is sometimes inverted on the retina and sometimes not. If writers of text-books were more accurate in their illustrations, which necessitates incorrect statements to describe them, we would not teach so much that is not true.

F. G. MURPHY, M.D.

Current Medical Literature.

Titles marked with an asterisk (*) are noted below.

Chicago Medical Recorder, June.

1.—*Devious Manifestations of Epilepsy. Sanger Brown.
2.—*Adherent Placenta. Charles B. Reed.
3.—*Inversio Uteri Complicating Placenta Previa, Etiology and Mechanism Considered. Rudolph W. Holmes.
4.—*Pathology of Hip-joint Disease. F. X. Walls.
5.—*Diagnosis of Hip-joint Disease. F. S. Coolidge.
6.—*Hip-joint Tuberculosis: Its Surgical Aspect. L. L. McArthur.
7.—*Mechanical Treatment of Hip-joint Disease. John Ridlon.
8.—*Case of Lupus Erythematosus. L. C. Pardee.
9.— Chronic Empyema of the Sphenoid Sinus without Involvement of Neighboring Sinuses. George E. Shambaugh.
10.—*Cerebrospinal Meningitis Treated by Lumbar Puncture. William Cuthbertson.
11.—*Nasal Inhalation of Oxygen Gas. Emil G. Beck.
12.— Two Cases of Senile Prostatic Enlargement Cured by Galvanocaustic Radical Treatment. F. Kreissl.
13.— Clinical Notes on Glyco-Thymolin. Hurlbut Roler.

Journal of the Boston Society of Medical Sciences, June 20.

14.—*Preliminary Study of Streptococci Isolated from Throat Cultures from Patients Ill with Scarlet Fever. Calvin G. Page.
15.—*Preliminary Note on Effects of Changes in External Temperature on Circulation of Blood in Skin. Theodore Hough and Bertha L. Ballantyne.
16.— Bacteria and Dental Caries (Preliminary Report). S. A. Hopkins.
17.— Some Devices for Cultivation of Anaërobic Bacteria in Fluid Media without Use of Inert Gases. Theobald Smith.
18.—*Preliminary Report on Diplococcus of Scarlet Fever (Class). Calvin G. Page.

Laryngoscope (St. Louis), July.

19.—*Edema of Nasal Mucous Membrane and Edematous Occlusion of Nasal Passages. H. Gradle.
20.—*Report of Interesting Case of Dyspnea in an Adult. Walter B. Johnson.
21.—*Hemorrhage Following Adenoid Operations. W. A. Martin.
22.— Case of Temporal Abscess Drained Through Attic after Ossiclectomy and Curettement. Hamilton Stillson.
23.— Multiple Rupture of Membrana Tympani. Kate Overacker.

Therapeutic Gazette (Detroit), July 15.

24.—*Intermediate Altitude for Consumptive Invalid. B. P. Anderson.
25.—*Hydrotherapy in Treatment of Insomnia. Irwin H. Hance.
26.—*Dangers of Hydrogen Dioxid in Surgery. George W. Spencer.
27.—*Organotherapy in Gynecology. W. A. Newman Dorland.
28.—*Treatment of Pneumonia. H. A. Hare.
29.— Evolution of Modern Therapy. Simon Baruch.

Medical Bulletin (Phila.), July.

30.—*Importance of Recognition of Certain Blood-Changes, and Especially Toxemia, in Our Therapeutics. John V. Shoemaker.

Cleveland Journal of Medicine, July.

31.—*Intestinal Obstruction Following Abdominal Section either Immediately or Remotely. John B. Deaver.
32.— Spina Bifida. J. J. Thomas.
33.—*Malarial Fever in an Infant Ten and a Half Months Old. F. S. Clark.
34.— Antipyretics in Children. J. B. McGee.
35.— Case of Hysteria. E. O. Leberman.

Colorado Medical Journal (Denver), July.

36.— Address before the Medical Society of Colorado. W. A. Campbell.
37.— Prevention of Certain Communicable Diseases in Colorado. G. E. Tyler.

Medical Examiner (N. Y.), July.

38.— Plea for Under-Graduate Instruction in Making Life-Insurance Examinations. Brandreth Symonds.
39.—Relation of Build (i. e., Height and Weight) to Longevity. Geo. R. Shepherd.

Medical Times and Register (Phila.), July.

40.— Orthopedics for General Practitioner. E. A. Tracy.
41.— Bilious Diseases; What are They, and Why So Called? C. F. Markle.

Merck's Archives (N. Y.), July.

42.—*Importance of Internal Remedies in General Surgery. Thomas H. Manley.
43.—*Thyroid Gland in Obesity. Horatio C. Wood, Jr.
44.—*Usefulness of Potassium Iodid in Cerebrospinal Meningitis. H. A. Moody.
45.—*United States Pharmacopeia. John Forrest.

Physician and Surgeon (Detroit and Ann Arbor), June.

46.—*Value of Complete Diagnosis. Fritz Maass.
47.—*Symptomatology of Puerperal Sepsis. Joseph B. Whinery.
48.—*Medical Treatment of Puerperal Sepsis, with Especial Reference to Serumtherapy. Howard W. Longyear.
49.—*Surgical Treatment of Puerperal Sepsis. A. W. Alvord.
50.—*Early Diagnosis and Treatment of Paretic Dementia. Irwin H. Neff.
51.—*Epidemic Influenza. Ernest L. Shurly.
52.— Pneumonia. Clifford Kirkpatrick.
53.— Monstrosities and Malformations: Are They of Importance to the General Practitioner. N. L. Andrus.

Journal of Medicine and Science (Portland, Me.), July.

54.—*Blood Examinations as an Aid to Diagnosis, with Case of Pernicious Anemia. B. L. Bryant.
55.— Certain Landmarks in Progress of Modern Medicine. Franklin Staples.
56.— Massotherapeutics. E. H. Judkins.

Peoria (Ill.) Medical Journal, July.

57.— Locomotor Ataxia: Its Early Diagnosis. Wm. R. A. Wilson.
58.—*Suggestive Therapeutics. E. M. Eckard.

St. Louis Clinique, July.

59.— Medical Issues of the War. Thomas Osmond Summers.
60.—*Skin Grafting—New Process. J. L. Wiggins.
61.— Essentials in Chemistry: Table of Solubility of Salts. C. W. Lillie.

Bulletin of Cleveland General Hospital, April.

62.— Extra-Uterine Pregnancy—Four Cases Operated Successfully within Less than Four Weeks. Marcus Rossenwasser.
63.—*Why Does the Surgeon Fail to find the Appendix? N. Stone Scott.
64.—*Newer Teaching About Gout and Uric Acid Diathesis: Their Diagnosis. Martin Friedrich.
65.—Porro-Cesarean Operation—Recovery of Both Mother and Child. George W. Crile.
66.— Case of Bromoform Poisoning. J. C. McMichael.
67.— Case of Bezold's Mastoiditis. Wm. E. Shackelton.
68.—*New Operation for Removal of Hemorrhoids. Thos. Chas. Martin.
69.— Two New Stains for Gonococcus. R. G. Schnee.
70.— Surgical Treatment of Pott's Disease. William E. Wirt.
71.— Hysteria. H. C. Eyman.

Medical Monograph (Topeka, Kan.), June 15.

72.— Functional Diseases of the Heart. S. S. Glasscock.
73.— Rheumatism and Valvular Diseases of Heart. John M. Bell.
74.— Paroxysmal Tachycardia. Albert S. Mackey.
75.—*Cardiac Injuries. Hal C. Wyman.
76.— Fatty Heart. J. H. Van Eman.
77.— Sounds in Determination of Cardiac Pathology. Wm. E. McVey.

Texas Medical Journal (Austin), July.

78.—*Intestinal Perforations from Within by Foreign Bodies. B. E. Hadra.
79.—*Some Tonsil Clippings. R. S. Carroll.

Medical Mirror (St. Louis), July.

80.—*President's Address to American Medical Association. Jos. M. Mathews.
81.— Vagina, the. Byron Robinson.
82.— Grip. C. D. Fitzgibbon.
83.—*Triplets: Report of Case. J. L. Early.
84.—*Report of Case of Cerebrospinal Meningitis. L. C. Royster.
85.— Deviations of Nasal Septum and Its Operative Treatment. Wm. B. Shields.
86.— Acute Dysentery. J. T. Anderson.
87.— Scarlatina. C. R. Day.

St. Louis Medical and Surgical Journal, July.

88.— Experimental Study of Children, More Especially of Washington School Children. Arthur MacDonald.

American Practitioner and News (Louisville), June 15.

89.—*Peculiarities in Heart Affections in Children. Philip F. Barbour.
90.—*Etiology, Diagnosis and Treatment of Hepatic Abscess. H. Horace Grant.
91.—*Peritonitis from Clinical Standpoint. August Schachner.

Pediatrics (N. Y.), July 15.

92.— Dry Antitoxin—Clinical Study of Its Value in Diphtheria. Louis Fischer.
93.—*Hip Disease: Cause, Diagnosis and Treatment. Ap Morgan Vance.
94.—*Rumination in a Boy of 9 Years. Luther C. Peter.
95.—*Case of Generalized Vaccinia. James Tyson.

Cincinnati Lancet-Clinic, July 22.

96.— Duodenotomy for Gastric Carcinoma. Louis J. Feid.
97.— Treatment of Certain Morbid Conditions. Robert C. Kenner.
98.— The Fever Thermometer. Geo. J. Monroe.

Medical Review (St. Louis), July 22.

99.— Our Work and Its Limitations. Edward C. Runge.

Medical Record (N. Y.), July 22.

100.—*Liquid Air: Its Application in Medicine and Surgery. A. Campbell White.

101.—*Shock in Modern Surgery. Geo. F. Shrady.
102.—*Hæmostasis in Intrapelvic Surgery. A. C. Heffenger.
103.—*Exercise Treatment in Tabes Dorsalis. Alfred Wiener.
104.—*Hydrophobia a Disease Easily Cured. Beverley O. Kinnear.
105.—Case of Complete Laryngectomy for Epithelioma—Recovery. F. C. Ard.
106.—Intestinal Obstruction in New-born Child. G. H. Carter.

Medical News (N. Y.), July 22.

107.—*Serum Treatment and Its Results. Hermann M. Biggs.
108.—*Light and Air in Treatment of Consumption in Colorado. Charles Fox Gardiner.
109.—Arrest of Development; Spina Bifida and Cleft Palate. W. A. McFarlane.

New York Medical Journal, July 22.

110.—*A Study of Delirium. William Hirsch.
111.—*Importance of Early Diagnosis in Locomotor Ataxia, as Affected by the Newer Pathology. William B. Pritchard.
112.—Properties of Buffalo Lithia Water. John V. Shoemaker.
113.—*Remarks Based on a Further Experience with Calomel in Diphtheria. L. D. Judd.
114.—*Administration of Atropin in Epilepsy. F. L. Wachenheim.
115.—Case of Typhoid and Malarial Fevers. W. H. German.

Maryland Medical Journal (Baltimore), July 22.

116.—*European Medicine About 1799. A. Jacobi.

Boston Medical and Surgical Journal, July 20.

117.—Not the Disease Only, but Also the Man. The Shattuck Lecture. Jas. T. Putnam.
118.—*The "Right-angle" Continuous Intestinal Suture. Hayward W. Cushing.
119.—*Examination of Stained Specimens of Blood in Its Application to Clinical Work. Henry F. Hewes.

AMERICAN.

1.—See abstract in JOURNAL, March 25, p. 660.

2.—This paper was printed in full in the JOURNAL of May 6.

3.—See abstract in JOURNAL, May 20, p. 1114.

4.—Ibid, May 27, p. 1178.

5.—Ibid.

6.—Ibid, p. 1178; June 24, p. 1439.

7.—Ibid, May 27, p. 1178.

8. **Lupus Erythematosus.**—After some remarks on the pathology of this disorder, Pardee describes a case in detail and the experiment of inoculating, with a piece of diseased skin, a guinea-pig which was allowed to live thirty-five days and then killed. It showed no traces of tuberculosis in any of its organs.

10. **Lumbar Puncture in Cerebrospinal Meningitis.**—Cuthbertson reports three cases of cerebrospinal meningitis occurring in the First Illinois Cavalry, during the late war. In two cases lumbar puncture was performed and the patients survived. There were 6 cases; 3 were punctured and recovered; three were not and succumbed. He thinks the facts, so far as they go, speak strongly for the therapeutic value of this procedure.

11. **Nasal Inhalations of Oxygen Gas.**—Beck describes a method of giving oxygen by nasal inhalations, which he claims has great advantages over the ordinary method of inhaling it by the mouth. A patient who underwent this treatment also remarked that inhalation in the recumbent position was much easier, and its invigorating effect much more quickly obtained.

14. **Streptococci in Scarlatina.**—Page has made cultures from the throats of twenty-four scarlet fever patients, and found a streptococcus in the primary cultures in all cases but one, but failed to isolate it in five cases. The principal point in his paper is the variation they show in acid products from sugar, which he thinks may be of importance in separating the varieties of this organism which have such different actions on the system and the existence of which prejudices the value of antistreptococcus serum.

15. **Effects of External Temperature on Circulation.**—The authors conclude their preliminary notes as follows: The results of our experiments would seem to show that at times there is a rise of capillary pressure going along with arterial constriction—effects of marked cold—and that at other times capillary pressure remains constant or shows only a slight rise when there is pronounced arterial dilation. In other words, capillary pressure is dependent on some other factor or factors than the amount of arterial tone. I should like to suggest that all our results are explained by supposing that the muscular coat of the small veins may be the other factor in question; if this constricts and dilates with the constriction and dilation of the arterioles we could have fairly constant capillary pressure with great variations in the amount of blood flowing through an organ; the inconsiderable changes in capillary pressure, which at times accompany the marked arterial dilation produced by exposure to heat, would be because of concomitant venous dilation, which permits an easier egress of blood from the capillary region; the rise of capillary pressure, which at times accompanies the arterial constriction produced by exposure to marked cold, would be due to the excessive concomitant constriction of the venules, which hinders egress of blood from the capillary region. May it not be that while the muscular coat of the small arteries regulates the *amount* of blood flowing to an organ, the capillary *pressure* is regulated by the simultaneous action of the muscles of both arterioles and veins?

18. **Diplococcus of Scarlet Fever.**—In this preliminary report Page states that he has made cultures from eight more cases of scarlet fever and in five of these found a large diplococcus resembling that described by Class. He is confident that he saw a similar large one in a number of primary cultures of the twenty-four cases above reported. He has attempted to cultivate this organism in agar-agar mixed with garden earth, as suggested by Class, but his results are not yet conclusive. He remarks that if the organism described by Class proves to be the cause of scarlet fever, numberless problems suggest themselves to be worked out. An important one will be the effect of increasing percentages of carbolic acid in the culture-media on the virulence of the organism, to see if there is any rational basis for treatment of the disease by large doses of carbolic acid—5 to 30 grains per day in five doses, freely diluted—as recommended by Dr. A. Wigglesworth of Liverpool.

19. **Edema of Nasal Mucosa.**—Noticing first the slight reference to the subject in rhinologic literature, Gradle reports three cases of edema of the nasal mucosa involving the entire nasal lining and absolutely occluding the passage. The cases he reports are the only ones he has met with in many thousand patients, and in all three it developed after an acute inflammatory attack; whether a simple coryza or influenza could not be determined. No local lesions existed, to which to attribute it. In none of the three was there any suppuration. The treatment was with cocain tampons, applications of silver nitrate, carbol-glycerin, sprays of Seiler's solution, of menthol vaselin. In one case a vascular hypertrophy was removed with a snare. All three cases were cured, though some had been of rather long duration.

20. **Dyspnea.**—Johnson reports a case of obstinate dyspnea from laryngitis and trachitis, of unusual severity, relieved by intubation and steam inhalations with lime water. Another case is reported that occurred in the practice of another physician. Both were young women about 26 years old, and each was six months pregnant.

21. **Hemorrhage Following Adenoid Removals.**—Martin reports three cases for the benefit of statisticians, as he states, of severe hemorrhage from removal of adenoid growths. He had been operating on these growths for seven years before he had any such unpleasant experiences, and had begun to think that his methods were more careful and better than those of physicians who had had them.

24. **Moderate Altitude in Phthisis.**—In this paper Anderson discusses the advantages of different degrees of altitude for consumptives, the high altitudes having, as has been recognized, superior advantage to the average individual. In many cases, however, the expected relief from the change does not occur, and he has found with a certain proportion of this class that benefit has followed change to a lower altitude; for a number of years he has urged such cases to temporarily go to an altitude of from 3000 to 4000 feet above sea-level and remain until improved. His attention was called some eight years since to the Mesilla Valley in New Mexico, and he has been much aided by his acquaintance with this locality. There are combined the important essentials of a maximum of sunshine and dry air together with only a moderate elevation. He finds that many patients, after spending two or three winters in this valley, find themselves able to endure the higher altitude and to continue their improvement there. It is impossible, he admits, to absolutely foretell the results in all cases and he notes a striking case where, against all his prophesying, the patient apparently recovered and died years later of a different disease.

25. **Hydrotherapy in Insomnia.**—Hance reports five cases of insomnia treated by hydrotherapy, in the form of hot-air baths, circular needle spray, douches and static electricity, with successful results. He thinks that the static electricity has an important part in the treatment, and that hydrotherapy and it together are more powerful and beneficial than either one separately.

26. See abstract in JOURNAL, April 29, p. 941.

27. **Organotherapy in Gynecology.**—After noticing some of the reported facts in the literature of gynecology of thyroid treatment, Dorland reports six cases in which this medication was used. He concludes that the thyroid, in addition to its general effect on metabolism, exerts an inhibitory action on the pelvic genital organs, and the uterus in particular, especially marked in the epithelial elements of its lining. As a result of this there is a retardation of hemorrhage from the uterine mucosa, which is directly antagonistic to the effect of ovarian secretions. Thyroid therapy is especially indicated in hemorrhagic affections of the uterus and all forms of pelvic congestion, notably in uterine fibromata, hemorrhagic endometritis, menopausal hemorrhages and chronic tubal diseases. The best results are to be expected in fibromata and recently developed pathologic conditions. The more chronic cases are more resistant. It also produces an increase in tissue changes of the mammary glands, and is therefore indicated in cases of insufficient lactation. Owing to the tendency to thyroid intoxication, it is well to discontinue the use of the drug for a week or ten days, at intervals during the course of treatment. Thyroid treatment is contraindicated in tuberculosis, which it seems to stimulate, and in serious heart disease, and it should be discontinued on the appearance of tachycardia. He also reviews the facts as to the use of mammary and parotid glands. Shober has reported a decrease in the size of tumors treated with mammary gland, which he thinks acts on the uterine muscles and connective tissues somewhat similarly to ergot. It has never given rise, in his experience, to any unpleasant symptoms. He has also had gratifying results in the use of parotid gland in ovarian disorders, inflammation, congestion, neuralgia, etc.

28. **Treatment of Pneumonia.**—In treating pneumonia Hare divides the disease into three stages and asks: "What means shall we employ in the onset? As regards the use of sedatives, they are applicable to but few, but with robust individuals he would use hot foot-baths and compresses and give veratrum viride tincture in 3-minim doses every fifteen minutes for three doses, and some Dover's powder to allay cough and pain. All depressing measures, however, should be discontinued after the first twelve hours. As regards venesection, it may be useful in some cases. It is a rather severe treatment and its effects are too permanent to make it commonly advisable. When consolidation has taken place, four conditions are to be looked after: 1. Fever, which he would combat by cold sponging, ice-bags over heart and head. Antipyretic drugs, he thinks, are seldom needful; cold is sufficient. 2. The second indication is to aid the circulation if it needs it. Digitalis has been our standby, but should be given rightly. Its action is so slow that in pressing cases 10 to 20 minims of the tincture or 1 to 2 minims of a physiologically tested and standardized normal liquid digitalis should be given hypodermically, and then need not be repeated for many hours. If the pulse be gaseous and relaxed, 5 to 10 minim doses of belladonna may be useful, given every four or five hours. Strychnia is, he thinks, often employed improperly, and if kept up causes more harm than good, though for combating sudden collapse it is invaluable, especially if combined with atropin. For prolonged collapse or tendency thereto, coca wine may be used. A good old brandy often agrees with patients of advanced age with feeble circulation. Nitroglycerin is invaluable if arterial tension is high; if low, it is useless, and in venous engorgement it is only a very indirect means of producing relief when a much better and more direct one is venesection. The value of oxygen gas is problematic. He uses it when respiration is difficult, and it generally seems to make the patient more comfortable; it may be partly by the mental effect. The stage of resolution is not discussed, as much had already been said on the subject. In conclusion, he remarks on the necessity of treating the cases individually; no one plan can be invariably followed.

30.—This paper was printed in THE JOURNAL of June 3.

31.—See abstract in JOURNAL, July 15, p. 164.

33. **Malaria in an Infant.**—Clark reports a case of malarial fever in an infant ten and a half months old. The case is illustrated with a diagram. Quinin was given by suppositories, after finding the parasite, 5 grains twice a day, but without effect. He then had to give the plain sulphate of quinin, 1 grain in fluid extract of licorice every two hours, beginning with 12 grains a day, and gradually reducing it until the temperature became normal. He asks how the child became infected, and suggests that it might have been from absorption from sewer gas by the milk.

42. **Internal Remedies in Surgery.**—Manley calls attention to the importance of recognizing the value of internal remedies as making it possible in some cases to avoid surgical operations. As a striking example of this he notices juvenile tuberculosis, affecting the joints, and shows that of late years not one operation is performed where formerly ten were for this condition. The use of the bitter tonics, cod-liver oil, preparations or combinations of mercury, iodin, phosphorus, creosote, salol, etc., have made this possible. While malignant disease still defies us, and surgery is in most cases a palliative, yet much can be done with local remedies. Many cancers have been thoroughly removed by escharotics. Venereal disease in nearly all its form yields often to internal remedies, and in many cases when the diagnosis is uncertain those latter both clear it and bring about a cure. Surgery cannot progress much farther, but there remains a wide chasm to be filled up in the domain of internal medicine.

43. **Thyroid Glands in Obesity.**—In this article Wood points out the usefulness of thyroid in reducing corpulence, and notes the objections, such as an occasional cardiac disorder. In most cases, however, there are no unpleasant effects from its use. The greatest disadvantage is the lack of permanence of its effects, and if we have succeeded in reducing the superfluous weight of an individual, the treatment must be continued by abstemious habits and regimen, a point on which the originator of the thyroid method, Yorke-Davies, laid great stress.

44. **Potassium Iodid in Cerebrospinal Meningitis.**—The apparent increase of cerebrospinal meningitis is noted by Moody, and he gives an account of several cases of the fulminant type and also of a local epidemic in which the iodin treatment recommended by Tanner was strikingly successful. His conclusions were as follows: In the fulminant or apoplectic form of cerebrospinal meningitis no known treatment offers any hope of cure. In the ordinary form, commonly known as "spotted fever," potassium iodid is the only drug which has shown any power to modify the disease. That drug should not be depended on alone, but any means known to therapeutics should be employed whenever it renders the patient more comfortable or aids him to resist the exhausting conditions of the disease. The contagion can, at least in some instances, be readily communicated to those exposed, provided the environment is the original focus of infection; the identity of environment is not apt to be found except at the point where the epidemic first appears. The disease is seldom communicated in any other locality than that first infected, but identity of sanitary conditions might be a source of danger of its further propagation. Finally, the writer does not consider the known influence of the iodid on absorption a sufficient explanation of its usefulness in the disease, but thinks it more likely that it either has some quality that acts as an antidote to the toxins secreted by the pathogenic organisms, or is unfavorable to their development.

45. **The United States Pharmacopeia.**—Forrest points out certain defects in the present edition of the "Pharmacopeia" in make-up, text, index, etc., and notices the propositions that have been offered by the committee on its revision.

46. **Value of Complete Diagnosis.**—Maass emphasizes the importance of a complete as compared to a simple correct diagnosis of the chief disorder, that is, taking in every possible condition of the patient that may complicate or affect the disease. His article is made up largely of cases in his experience, illustrating the advantage of thorough investigation.

47, 48 and 49. **Puerperal Sepsis.**—In this symposium on

puerperal sepsis, the symptomatology is discussed by Whinery, and he points out the possibility of either septic infection or a putrid intoxication, the latter being less grave than the former, and constituting about 75 per cent. of all cases. He suggests the value of blood examinations in dubious cases on account of not only the demonstration of microbes, but also the clinical data offered by the blood elements. In well-marked sepsis there is a diminution of red cells. In cases of moderate severity there is marked leucocytosis, which is not nearly so marked or is absent in mild and in very severe and rapid cases.

Longyear discusses the medical treatment, especially the use of serumtherapy with streptococcic and other infections. His summary is as follows:

Local Treatment.—Early recognition and destruction of pseudomembrane by topical applications is of great importance. Iodin, carbolic acid and chloral mixture is a safe and efficient application for this purpose. The intrauterine douche, frequently applied, is of most value in the forms of infection unattended by the formation of a pseudomembrane, but is useful also in connection with local applications. The vaginal use of peroxid of hydrogen is useful in all forms of infection. Frequent packing of the vagina, previously dried, with iodoform gauze is especially useful in cases attended with pseudomembrane. Inspect infected cases daily with the speculum. Some uncomfortable surprises may thus be avoided, and the local treatment will be made understandingly.

General Medication.—Quinin in large doses twice daily; whisky and strychnin to support the heart, if indicated; nuclein and protonuclein in all cases; mercurial and saline cathartics at first in all cases, then as indicated: serumtherapy to be applied in all cases when the Klebs-Loeffler bacillus or the streptococcus can be demonstrated by bacteriologic examination to be present, and also in all other cases when such examination has not been made, but in which these specific varieties of infection are probably present. Streptococcus antitoxin serum is to be used persistently to prevent pus formation and symptoms of systemic infection, even if local symptoms and high temperature persist.

The surgical treatment is discussed by Alvord and, according to him, consists in thorough curetting of the cavity of the uterus followed by antiseptic irrigation and drainage. The use of Marmorek's serum is suggested for certain cases where complications have arisen, and, in case all these measures fail, the sole chance of life will be to perform hysterectomy.

50.—See abstract in JOURNAL, April 22, p. 876.

51.—Ibid, February 25, p. 439.

54. **Blood Examinations.**—Bryant calls attention to the importance of blood examinations in various diseases, with leucocytosis or not, as an aid to diagnosis, and reports a case of pernicious anemia in which the diagnosis of typhoid was corrected in this way. The patient's red blood-corpuscles had been reduced to 800,000, and the white to 4000. He rapidly recovered under the use of arsenic and bone marrow.

58. **Suggestive Therapeutics.**—Eckard reports four cases suffering from various pains and aches, treated by placebos, and believes that if these were used more we would discover more hysteria and use less morphin than we do.

60. **Skin Grafting.**—The method here advocated by Wiggins is the one suggested by Hodgen in 1871, of using a graft of the exuberant epidermic cells from the sole of the foot. The method as he reported it consisted of sprinkling the unprepared epidermic cells over the granulating surface. These suggestions were so completely ignored that Wiggins only learned of its existence after nearly completing this article. The method he advises is to have the foot prepared by a thorough scrubbing, and remove the outer layer of epidermis, which must necessarily be full of organisms. This is followed by bathing in strong bichlorid solution, and the foot is then covered with moist boric acid dressing overlaid with rubber tissue, which serves, by reason of heat and moisture, to loosen the deeper and more vitalized layer of cells. After twelve hours this dressing is removed and the surface thoroughly scraped with a dull knife. The cell mass thus obtained is placed in a mortar, which in turn is placed in a water-bath with a temperature of 110 to 115 F., and stirred until thoroughly desiccated. The object of this is: 1, to permit of trituration and to further separate particles, and, 2, to divest them of all moisture so as to influence the adhesion of the cells to the moist surface of the ulcer, thus facilitating union by exosmosis. Where in the ordinary method we have a single graft, by this we may have 1000, and the chances of their living is increased. The dangers of this graft thus applied are: 1, excessive secretions of the surface detaching the particles; 2, insinuation of exudates between graft and granulation. To avoid these he either covers the granulated surface wth perforated rubber tissue, or puts strips of this over the surface, dusted with the grafts, filling the center of the ulceration with strips of gauze and applying the ordinary dressings. Each of these methods has its advantage, the latter by fencing off the field from the secretions of other parts which are absorbed by the dressing, and the former by affording little islands of greater vascularity in the perforated spaces, thus affording the better chance of life for the new tissue. When the granulated surface is small, not covering more than 1½ or 2 inches, neither of the above methods is necessary. His results by this method have been most satisfactory.

63. **Failure to Find Appendix.**—Why surgeons fail to find the appendix is attributed by Scott to the previous occurrence of appendicitis obliterans totalis, rather than to any possible congenital absence of the part. He analyzes five cases, observed in the dead body, of reported congenital absence, and finds that in none of them was there such thorough examination made as would absolutely confirm the opinion that the appendix never existed.

64. **Gout and Uric Acid Diathesis.**—The theories of uric acid diathesis are here discussed, and the usual conclusion arrived at: that according to the best modern data we can now hold that uric acid is a physiologic product, and as such is indifferent; that when the system can no longer produce it the alloxur bases are formed, and that these bases are poisonous. The diagnosis of what we call uric acid diathesis is no longer guess work, as the examination of the urine and blood will show the characteristic changes. In the former the alloxur bodies are always increased, as they are in leucocytosis and leucemia. To differentiate from leucemia, a glance at a blood specimen is sufficient and blood examination is necessary to differentiate leucocytosis which may coexist with uric acid diathesis. In gout, the destructive metabolism of the nuclei of the cellular elements is morbidly increased, and the disintegrated nuclein is formed into uric acid as long as the organs for its formation are normal and the processes of oxygenation sufficient. We do not know, however, what produces this morbid destruction of the nuclein.

68. **Hemorrhoids.**—Martin describes an operation for painless removal of hemorrhoids by means of a new form of clamp which he illustrates. The clamp is in the form of a hollow cone introduced into the rectum. The pile is received and clamped in an opening near its base. It blocks the field against any invasion of the feces or other matter. Local anesthesia with cocain renders the operation painless.

75. **Cardiac Injury.**—Remarking that his practice has included some cases of non-fatal cardiac wounds, and that some one has said that about 12 per cent. of these injuries recover, Wyman assumes that in this estimate pericardial as well as cardiac lesions are included, and he goes over the symptoms of cardiac wounds and concludes that most of them, in which the patient lives long enough to ask the services of a physician, are limited to the pericardium. The disordered action of the heart in these cases may be due to the presence of blood or air in its sac, encroaching on it and impeding its movements. He would advise the operator who opens the pericardium or enlarges a wound to use the utmost caution as regards infection, and objects to any extensive probing or exploration with the fingers. If blood clots are present, their release would give immediate relief. In case the blood continues to flow and is not from an intercostal or mammary artery, the heart should be explored and the source found and ligated. No one should take the chances of an intercostal or mammary artery pouring its contents into the pericardium. Sutures should be cut short that they may become absorbed or encysted. To close the pericardium and chest wall, interrupted sutures are the best, and should include both. Gauze or cotton dressing, or, better, adhesive plasters should be applied to the external wound. The bowels should be freely opened with calomel or salines, to guard against pericarditis and endocarditis. In enlarging a wound

which one has cause to think involves the pericardium, care should be taken not to open the pleura if it has not been already opened. When the wound of entrance is in the chest or abdomen at a point remote from the pericardium, it had better be opened by an incision in the fourth intercostal space commencing near the sternum and extending upward for three inches. The fourth costal cartilage may be divided close to the sternum and pulled upward to give more room. If the third costal cartilage must be divided, an incision should be made parallel with the sternum, one inch from it and at nearly right angles to the first incision. The included soft parts may be divided with scissors. Retractors may be used to hold the wound open so that access may be had to the heart. The index-finger should be passed between the apex to raise it up and steady it while the bleeding point is embraced by a curved needle carrying a ligature. This curved needle, smooth and round, held in a needle holder, is not liable to unnecessarily wound the heart tissue.

78. **Intestinal Perforations from Within.**—Hadra's paper treats of perforation of the intestines by foreign bodies, which he suggests may take place very gradually and a considerable time after the original ingestion. He reports several cases of abdominal abscess which he believes were caused in this way; in one of which the corpus delicti, a small bone, was found imbedded in indurated omentum. In conclusion, he calls attention to these perforations as occurring in the rectum, especially in that form which occurs just above the so-called pelvic diaphragm, say above the line of the coccyx. These cases reveal themselves as chronic periproctitis with inflamed hemorrhoids, rectal ulcers, etc., and a correct diagnosis is not always easy.

79. **Tonsil Clippings.**—The writer considers the following topic: Follicular tonsilitis, peritonsillar abscess, hypertrophy of pharyngeal tonsil.

80.—This address was printed in full in the JOURNAL *of* June 10.

83.—See title No. 29, p. 214.

84.—Ibid, No. 27.

89.—See abstract in JOURNAL, June 3, p. 1254.

90. **Hepatic Abscess.**—According to Grant's view, hepatic abscess is more common than has been generally accepted, is frequently infected by way of the ducts, and is not necessarily connected with tropical dysentery. He notes the symptoms as described by Johnston and Fontan: pain, indigestion, nausea, intestinal disturbances, irregular temperature, occasional jaundice, the enlargement which is usually palpable etc. The use of the aspirator after the tumor appears, though not approved by some authorities, is advised by Grant, and he thinks its dangers are slight and the indications it gives valuable. It is unwise to allow the abscess to enlarge, as is often advised, because it increases the suffering and renders multiple abscess more probable. He has had no experience with the subphrenic abscess located in the spaces about the stomach below the diaphragm. Its causes and symptoms, however, are much like those of acute septic abscess in the liver substance, and the diagnosis and treatment are less difficult. Recognizing, therefore, a chronic slow-growing and an acute septic form of liver abscess, the former characteristic of the tropical variety, the latter much more rapid in its course and following an attack resembling typhoid, he advises treatment, after diagnosis, by incision down to the liver, stopping at the surface of that organ until the existence of firm adhesions is made out. If there are none, wall off the cavity and follow the aspirating-needle into the abscess cavity with a bistoury, wash out and drain. A still better plan, however, is to pack the wound when the liver is reached and wait thirty-six hours until further adhesions have formed, and then incise and perhaps curette and drain in safety. The hemorrhage, if the cavity is deep, may be troublesome, but yields to suture or packing. If the abscess is single, the operation will be successful in a large percentage of chronic cases, though in the acute septic form the prognosis is not so good. Perhaps 60 per cent. of abscesses are more accessible through the diaphragm and can be reached, after the use of the aspirating-needle, by excising a part of the eighth or ninth rib, and if the pleura cannot be peeled off the ribs and diaphragm, carefully incising it and sewing the costal to the diaphragmatic portions, thus shutting it off from infection, then incising the liver from the diaphragm and, if possible, stitching the liver wound to the diaphragmatic opening; after this irrigation and drainage. In multiple abscesses a recurrence of the symptoms will indicate pockets that have not been reached, and if the accumulation can be found, the same rational surgical treatment is indicated. Such cases, however, are usually resistant to any surgery. He believes that the prognosis in single abscess without severe sepsis and with prompt and careful treatment is favorable for recovery in at least 75 per cent. He briefly reports five cases, one secondary, probably to disease of the small intestines or colon, one undoubtedly a direct infection, most likely from typhoid fever, and two apparently traceable to appendicitis. In one the source of infection was not clear.

91.—See abstract in JOURNAL, June 3, p. 1255.

93. **Hip Disease.**—After noticing the principal causes of hip-joint disease, which in practically all cases are either syphilitic or tuberculous, the author discusses its diagnosis and treatment, the principal new point of which is the description of a special form of splint devised by the author which he illustrates.

94.—See abstract in JOURNAL, July 8, p. 101.

95.—Ibid, May 27, p. 1180.

100. **Liquid Air.**—Campbell White, after describing the properties and behavior of liquid air and noticing the fact that it is not antagonistic to the lower forms of life and therefore is in no sense a germicide, gives results of his therapeutic experience with this agent. He has employed it in varicose ulcers, chancroids and in some specific ulcers, and he believes, from the results of his experience, that we have nothing at our disposal that will so quickly, thoroughly and painlessly clear up the edges and stimulate the surface to granulation as does the proper application of liquid air. The applications should not be too frequent, as it is not desired to break down the new granulations. After one or two applications to a varicose ulcer, a repetition once a week is generally sufficient. A chancroid or mixed sore will be disposed of at one application, generously applied. A "beefsteak" chancre requires two or three applications three or four days apart. All ulcerations thus treated seem to do better with dry dressing instead of ointment. An ulcer, boil, carbuncle or bubo in its early stage is absolutely aborted with one thorough freezing. If more advanced, several applications at intervals of twenty-four hours are required. When pus has formed in large quantities, it is best to open, under anesthesia, with this agent. In advanced bubo or carbuncle it is unnecessary to curette if liquid air is thoroughly applied to the base of the abscess after incision. He has also used liquid air in sciatica, herpes, intercostal and facial neuralgia, obtaining permanent relief by applying the liquid air to the spinal end of the affected nerve. He thinks the prospects of the use of liquid air in lupus are very encouraging. As regards the treatment of carcinoma, he cannot express any positive opinion for want of experience. One reason why it acts so well he credits to its being a natural application. Air that is in liquid form is the same as the air which envelops the tissues normally, the only difference being its extreme cold, and the tissue destruction from its actual application is less than from handling the glass tube containing it. He applies it with a cotton swab or by the spray.

101. **Shock in Modern Surgery.**—The principal feature of this article is a protest against too much delay in operation as favoring the occurrence of shock. Quickness of operation is not at all incompatible with carefulness, and the author objects to manipulations and elaborateness of technic requiring the expenditure of time. The special sensitiveness of the nerves supplying certain parts of the body is to be considered in this connection, and he also alludes briefly to the dangers connected with certain positions: the semi-recumbent, Sims and Trendelenburg positions, as contributing to shock.

102. **Hemostasis in Intrapelvic Surgery.**—Heffenger's paper is a discussion of the condition and details of preventing hemorrhage in intrapelvic surgery, and not easily abstracted.

103. **Exercise Treatment in Tabes.**—This article gives the author's report of the results of seven months' experience

in the exercise treatment introduced by Frenkel for tabes dorsalis. He reports three cases, in all of which ataxia was pronounced and in which this symptom has been greatly relieved. His method does not require complicated apparatus as used by Frenkel, but simple appliances such as can be found in any doctor's office or constructed by the patient himself. The different movements are not enumerated here. He commences the treatment first in bed, in a recumbent position, then sitting up in a chair and, lastly, in walking and moving about, each case, however, being treated individually, according to its needs. As regards other symptoms of the disease, they are not mentioned or discussed here, ataxia alone being considered.

104. **Hydrophobia.**—Kinnear advocates the use of the "Buisson" method in the treatment of hydrophobia, claiming that this is more efficient than the Pasteur method. It consists especially in hot air and vapor baths, and he has collected a number of testimonials of its value.

107. **Serum Treatment.**—Biggs' paper is continued and will be given in abstract when completed.

108. **Light and Air in Phthisis.**—Gardiner calls attention to the climate of Colorado as affording the conditions of light and air, altitude and dryness that best suit the outdoor treatment of phthisis, and tent life, he thinks, comes nearest to the ideal condition for a certain number of patients. The tents he would use, however, differ from the ordinary ones and are described in detail, all conditions for ventilation, cleanliness, heating, etc., being met. Such a tent can be occupied in Colorado at 6000 feet altitude for at least eight months of the year, and could be transported to a milder climate farther south for the remainder.

110. **A Study of Delirium.**—Noticing first the lack of agreement among medical writers as to the conception of delirium, Hirsch thus formulates his own definition: "Delirium is a physical state characterized by an abolition of self-consciousness, by an incoherence in the chain of conceptions, and by the appearance of symptoms of sensory and motor irritation." Dreaming is its physiologic analogue. He then points out the differential diagnosis between this and similar condition: mania, melancholia, hallucinatory confusion, etc. In mania there is rapidity of the formation of ideas and paralysis of the higher psychic inhibitory apparatus. The maniac is compared to a man observing the landscape from a rapidly moving train, where scenes pass too rapidly before him to give him any ordinary impression of their nature. The delirious patient, on the other hand, receives no ordinary impression, because he is in mental darkness. The maniac may remember his actions; there is no absolute loss of consciousness. Melancholic frenzy is distinguishable by the unmistakable, dominating presence of fear, hallucinatory confusion by the presence of hallucinations. The clinical picture in all these forms will serve to distinguish the condition. Delirium may ordinarily occur under various conditions. It means a state of inanition and demands stimulation. The writer goes over the various conditions in which it may occur and calls attention especially to the importance of its recognition and early treatment. In general the therapeutic treatment is indicated by the underlying disease when that is recognized. The fact, however, of exhaustion, must be kept in mind and treatment be instituted accordingly.

111. **Early Diagnosis of Tabes.**—After some remarks on the newer pathology of locomotor ataxia, Pritchard states his conviction that if recognized with sufficient promptness, before secondary sclerosis has appeared, it may become practically a curable disease. He calls attention, therefore, to certain points, the early recognition of which he thinks would be of the greatest practical importance. Bearing in mind the usual etiologic features and the legitimate deductions from the new facts and theories in regard to this disorder, he thinks any nervous disorder, especially if sensory, occurring in a man between 30 and 45, who admits or exhibits evidence of previous syphilis, and whose occupation involves exposure or overexertion, should excite suspicion sufficient to at least demand an investigation of the knee-jerk, the pupil and the functions of the genito-urinary apparatus. If in such there appear evening headaches with insomnia for the early part of the night and usually an excessive fatigue out of proportion with previous powers of endurance, the condition should be looked after. He then goes over the symptoms: those of common sensation; disorders of the sensibility; pain anesthesia; and ocular symptoms such as strabismus and ptosis without pain, described by Moebius as characteristic; Argyll-Robertson pupil; optic atrophy; genito-urinary symptoms; the reflexes; trophic symptoms, and visceral crises are noted in detail, thus covering the larger portion of all the symptoms of the disease.

113. **Calomel in Diphtheria.**—Judd first refers to a paper read two years ago, at the session of the American Climatological Association, in which he recommended the heroic use of calomel in diphtheria. The present article continues the same recommendations. Calomel has been his main stay in the treatment of pronounced cases of the disease. Its use does not do away with the necessity of faithful and intelligent nursing. As regards antitoxin, he admits the usefulness in the doubtful, mild and early stages of the disease, but does not feel so sure of it in the advanced condition.

114. **Atropin in Epilepsy.**—Wachenheim reports a case of the treatment of epilepsy with combined usage of atropin and potassium bromid. He considers epilepsy in idiopathic cases, such as the one he describes, as due to an autointoxication, producing an abnormal irritation on the part of the cortical cells. According to his theory the mechanism of the treatment is as follows: The bromids diminish the sensibility of the cortical cells,which have become hyperesthetic to variations in the blood-supply; atropin stimulates the vasomotor centers, thereby making the blood-supply more uniform. In the early stages of treatment bromids are useful to dull the irritability of the cortex until the proper vascular tonus is established. When that point has been reached, they are of less importance and may be reduced or withdrawn. Neither the bromids nor atropin can in any way meet the casual indication. If the disease depends on a passing intoxication, these drugs will suspend the destructive action of the epileptic seizures until the *materia peccans* has ceased to act; if there is a permanent cause, as seems to exist in the majority of cases, such treatment will naturally be at best only a palliative.

116.—See abstract in JOURNAL, May 6, p. 1000.

118. **Right-Angle Continuous Intestinal Suture.**—The right-angle continuous suture here described is a modification of the Kurschner or the continuous Lembert. Its advantages are that it can be applied more rapidly than any other suture, with scarcely an exception. It can be interrupted at any point if desired, and then reinforced by another superimposed if thought necessary. If the suturing is properly done, no reinforcing is necessary. He describes the technic in detail, with illustrations, and sums up its advantages as follows: 1. The suture does not involve the mucous membrane. 2. The intestine is closed by a suture which acts so that the greater the tension to which it is subjected the closer is it drawn. 3. It can be inserted very rapidly and easily. 4. The closure of the intestine is impervious and efficient. 5. Its technic is simple. He reports briefly some results of its use in the hands of other surgeons.

119. **Blood Examinations.**—In the conclusion of Hewes' paper, he points out the general lines of usefulness of blood examination in clinical work. In the first place we are thus able to diagnose the existence of anemia, to estimate its severity and determine its type. The appearance of degenerative changes in the red corpuscles proves the anemia. The extent of these changes, the appearance or non-appearance of 'blasts" aid us in determining its severity. The characteristics of the blood in pernicious anemia are: 1, marked poikilocytosis, with tendency to increase the size of red corpuscles, and, 2, the presence of "blasts," more particularly megaloblasts. If we do not find a megaloblast, we have a secondary anemia. The evidence of anemia found in many cases consists in the presence of achromia with some distortion, with the number of corpuscles normal. As a rule there is a reduction of hemoglobin; a very mild anemia may sometimes be discovered by this hemoglobin estimation when it is not apparent from the stained specimen. Anemia is not therefore to be ruled out except by

the hemoglobin estimation—specific gravity. In the second place, this blood-staining method may reveal the existence of a leucocytosis and determine its type. "Thus by finding a neutrophile leucocytosis with a considerable proportion of myelocytes we may diagnose myelogenous leukemia, a marked basophilic leucocytosis, lymphatic leukemia.

"If we find an unmixed neutrophilic leucocytosis we know that we have present one of the conditions with which this leucocytosis is associated and we can rule out all conditions which do not have a leucocytosis. Such finding may help us in a given case to differentiate pneumonia from phthisis, suppuration or pyemia from malaria, appendicitis from typhoid, scarlet fever from measles, to diagnose the existence of suppuration, hemorrhage or certain acute infectious diseases, to rule out typhoid or malaria.

"If we find an oxyphilic leucocytosis we are led to consider some condition thus accompanied, as trichinosis, leukemia.

"If our blood-slide leads us to suspect an increase in the number of leucocytes, and we wish to estimate the exact number, we can make a white count. Where the number appears normal we gain our knowledge without this trouble.

"In the third place, we may discover by this method the presence of blood parasites, the plasmodium malariæ, the filaria sanguinis hominis, the spirillum of relapsing fever. It is customary to look for these parasites in the fresh specimen, where they are seen alive. But it is perfectly possible to discover them in stained specimen."

FOREIGN.

British Medical Journal, July 8.

Description of New Pathogenic Microbe of Sewage; Bacillus Pyogenes Cloacinus. E. KLEIN.—The author describes a new bacillus obtained from sewage matter, with strong pathogenic action, which he has called bacillus pyogenes cloacinus. It is a minute non-motile bacillus, staining slightly in Gram's solution. Minute doses injected into guinea-pigs lead to fatal results in from twenty to twenty-four hours. Culturally, it resembles Loeffler's bacillus suisepticus to a certain extent, but the action of the latter on rodents is quite different.

Plastic or Croupous Bronchitis. THOMAS OLIVER.—Noticing the rarity of these cases, Oliver reports two in detail, giving illustrations of the molds of the bronchial tubes thrown off. Discussing the disorder, he does not think it specially related to tubercular disease. Its pathology is obscure and its treatment is divided into: 1, the methods used to loosen and dislodge the membrane, and 2, to prevent their recurrence. In his cases inhalation and sprays were generally unsatisfactory, and he does not speak with special favor of the use of emetics. The internal use of iodid of potash with or without expectorants gives as good results as anything. Ewart recommends the intratracheal injection of oil or a mild solvent such as lime water or trypsin. To prevent recurrence the writer knows of nothing better than attention to general health; healthy, bracing atmosphere, good food and tonic medication.

Some Points Connected With Sleep, Sleeplessness and Hypnotics. JOHN BUCKLEY BRADBURY.—This lecture treats of the physiologic and therapeutic action of chloralose, urethanes, sulphones and vegetable hypnotics of which only opium and its alkaloids are taken up.

Cases of Septicemic Infection Treated With Antistreptococcus Serum: Rapid Recovery. J. MITCHELL BRUCE.—This paper reports two cases of septicemic infection treated with antistreptococcus serum. From the first of these the author deduces that serum may succeed in septicemia after all ordinary methods fail, and that its action may be extremely rapid. From the second, which was of the cerebrospinal type, the conclusion was the same, but he also found that when one serum had failed another might succeed. The practical lesson is not to be content with the trial of a single serum, if it fail.

Lancet, July 8.

Tracheotomy in Diphtheria GEORGE THORNTON.—This is an analysis of 151 cases of diphtheria, of which 49 died. It covers the period since the introduction of the serum treatment in the Fountain Fever Hospital, Tooting. The causes of death in the 49 cases were: toxemia in 8 cases; in 16 asphyxia from extension of the membrane; 5 from hemorrhagic diphtheria, always a fatal form of the disease; 9 deaths resulted from the occurrence of broncho-pneumonia; 2 from late respiratory paralysis and the accumulation of mucus in the bronchial tubes; 3 deaths were due to acute tracheitis and bronchitis, no other cause being found; 1 patient, a baby, died from the late development of marantic thrombosis of the longitudinal sinus; 5 were due to a combination of cardiac and gastric symptoms, put down as gastric crisis. The use of serum in staying the disease and modifying the mortality was very striking. In not a single case was the trachea or bronchus affected after the operation, when the serum had been used. Injection on the second day of the disease gave 21 cases with 2 deaths; on the third day, 47 with 16 deaths; on the fourth and subsequent days, 83 cases with 31 deaths. He believes in giving the serum freely in fairly large doses.

After-History of Excision of Entire Breast. J. E. SIMPSON.—In this study of the report of 90 cases operated on for malignant disease of the breast it appears that 70 were alive one year after operation; 49 two years; 33 three years; 19 four years; 14 five years; 8 six years; 4 seven years; 3 eight years; 3 nine years; 3 ten years, and 1 survived eleven years after operation. These figures would seem to disprove the claim that any case which remains free from recurrence for three years may be considered cured.

Chinosol in Phthisis. ALEXANDER MACGREGOR.—The author reports six cases treated with chinosol—oxyquinolin sulphate of potash—given in doses from 3 to 5 grains three times a day, all with decided improvement. In the out-patient treatment by the author, some patients seemed to derive no benefit, but the difficulty of observation was greater. He thinks that it is a valuable drug in the treatment of phthisis.

Glasgow Medical Journal, July.

Position of Gravid Uterus at Onset of Labor With Regard to Latero-Flexion and Rotation. ALEX. MACLENNAN.—The author has investigated the position of the gravid uterus in patients presenting themselves at the Glasgow Maternity Hospital during his term of residence as in-door house surgeon, and gives here the results, which are summed up in the following conclusions: Right flexion with right rotation is by far the commonest deviation. No case of the converse was met with. Flexion is caused by purely mechanical conditions, and it will tend to produce rotation to the same side. Flexion has no relationship with presentation or position of the fetus. Rotation is due to laxness of the uterine ligaments, and possibly to irregular contraction, but not to an irregular arrangement of the muscular fibers. It may replace latero-flexion as an attempt at accommodation. One case, No. 7, showed in the first three days, first symmetry, then rotation to the right, and finally rotation to the left. Only two cases of flexion without rotation occurred and they were complicated by contracted pelvis. An absolutely symmetrically-placed uterus is more common in primiparae, but one medianly placed, if accompanied by rotation, is more common in multiparæ.

Annales de Dermatologie (Paris), June.

Lesions and Nature of Indurated Erythema. G. THIBIERGE.—The conclusions of this article can be summarized in the statement that indurated erythema, the ulcerous variety studied by Hutchinson as well as the non-ulcerative described by Bazin, should be classed with cutaneous tuberculosis, or, to be more exact, should be included among the cutaneous manifestations of tuberculous infection caused by the Koch bacillus. It thus takes its place beside tuberculous gummata, with which it presents the greatest clinical affinity.

What Are the Limits of Syphilitic Infection?—DE BEURMAN AND DELHERM.—The absence of syphilitic antecedents in so many cases of tabes is explained by these writers as due to the frequency of syphilis occurring unrecognized or ignored. If the truth were known, they state, the subjects hitherto considered refractory to syphilitic infection would be recognized as being already syphilized. They demonstrate that it is impossible to fix a moment when the subject escapes from the syphilis of his progenitors; also that in spite of the clinical truth of the classic doctrine of non-infection a large number of syphilitics may be and are infected while they still bear the imprint of an anterior or ancestral syphilization. It would be very important, if we could determine at what moment and under what conditions a syphilitic, a heredosyphilitic or a dystrophosyphilitic could be inoculated with a new syphilis, but this seems to be impossible at present. The large number of cases

of ignorance, misunderstood or latent syphilis largely compensates the insufficiency of statistics in respect to the specific origin of tabes, general paralysis and aneurysms. It would be interesting, they add, to learn whether this class of syphilitics is infected lightly by the second infection when they contract syphilis, or whether it may not be this class that, on the contrary, is most predisposed to the severest affections of the nervous system, such as tabes and general paralysis.

Bulletin Medical (Paris), June 24.

Perforation and Abscess From Ascarides. PAUCHET.—A slow and insidious abscess with perforation of the intestines was operated on in a man of 61, but a fistula persisted for six months, with pus occasionally exuding, until a lumbricus was observed in it and extracted with two others, about 15 cm. long, when the fistula healed at once without further trouble.

Presse Medicale (Paris), July 1.

Masculine Osteomalacia. P. BERGER.—Radiographs of the case reported show that almost the entire skeleton was affected, but especially the extremities, which had grown very much shorter, with an almost incredible twisting and contortion of the bones, too soft to spontaneously fracture. The patient, a young man of good circumstances and habits, of a healthy family, appeared first for treatment of a double genu valgum. One limb was operated on as usual, but the trouble persisted and the general affection developed, which leads Berger to warn against genu valgum developing suddenly with pain and difficulty in walking out of proportion to the extent of the deformity, especially if there is lateral mobility of the knee on either side. The painful cramps, contractions and trembling which accompany the earlier stages of osteomalacia pass away later and are relieved by immobilization in a Bonnet splint. The conclusions of a careful study of the chemistry of the case are easier to state than to carry out in practice: namely, that therapeutic treatment must aim to improve the evolution of the insufficient ternaty substances, increase the oxidation of nitrogenous substances and modify the disassimilation, that is, augment the fixation of lime by the bones and promote the phosphoric interchanges. Double castration was recommended but refused by the patient. Berger considers castration no more empiric or irrational for men than for women in the treatment of osteomalacia. Why should not the removal of the testicles in man accomplish the same as the removal of the ovaries? We know that Truzzi has reported 83 per cent. cured out of 97 women with osteomalacia; Polgar 6 out of 7, and Busche 5 out of 6.

The Blood in Erysipelas. A. CHANTEMESSE AND E. REY.—The blood affords earlier and more delicate indications in erysipelas than any other clinical manifestation, and is a certain basis for the prognosis before any symptoms of recurrence appear. A number of typical curves are graphically portrayed, from which it is evident that the polynuclear leucocytes gradually decrease in number from the third day of the disease to complete recovery. The number of large mononuclear leucocytes is not materially modified, sometimes increasing at the approach of defervescence, to return soon to normal. The lymphocytes, on the other hand, rapidly increase as the fever falls and convalescence is confirmed, their accumulation the evidence of recovery. The eosinophiles, generally absent during the febrile period, also accumulate as recovery approaches. This combination forms a characteristic scheme.

Semaine Medicale (Paris), July 5.

Disturbances in Walking in Hemiplegia Studied With the Kinematograph. G. MARINESCO.—A series of fifty-two cuts shows the peculiarities of the gait in hemiplegia, and brings out certain hitherto unnoticed characteristics, among them the elevation of the pelvis and a deep fold in the skin of the lumbar region on the paralyzed side, and a deviation of the spinal column with the convexity towards the healthy side. Marinesco extols the kinematograph as a means of observing progress in cases under treatment and for teaching classes, showing with projections the abnormal characteristics of all diseases affecting the gait, gestures, etc., long after the subjects have disappeared from sight.

Archiv f. Exp. Path. u. Pharmakologie (Leipsic), xlii, 2 to 4.

Theory of Alcohol Narcosis. MEYER AND BAUM.—*Dubois* noticed that certain plants exuded droplets of moisture over the surface when exposed to the influence of chloroform, ether, benzin and alcohol. He considers the process an indication that the vapors penetrated the protoplasma of the plant tissues and forced out the water, taking its place. Meyer bases a theory in regard to the effect of narcotics in man on the observation of this phenomenon, suggesting that certain substances in the protoplasma of the cell, the lecithin, etc., so important to the healthy functioning of the cell, are dissolved out of their normal proportions of solution and combination in respect to the other components of the cell, the water, salts, albumin, etc., by the tension of solubility between them and chloroform, alcohol and other narcotics, analogous to the effect of salt in the organism. If this theory is correct, then all chemical substances which dissolve fat and bodies resembling fat—lecithin, protagon, etc.—must produce a narcotizing effect on living protoplasma, and the effect would be most marked on the cells which contain the largest proportion of these substances: the nerve-cells. The effect would also depend on the mechanical affinity of the narcotics for the other constituents of the cells besides the fatty matters, especially the water, and also on its coefficient of division in a mixture of water and fatty substances. A large number of tests are reported which indicate, in fact, a narcotizing power for a number of chemically indifferent bodies of the aliptic series, the cause of which can not be ascribed exclusively to the splitting or saponification caused by them. Baum also reports experiments which support the theory and confirm in particular that the narcotic effect is in direct proportion to the coefficients of division determined by a mixture of oil and water.

Simple and Accurate Method of Determining Amount of Mercury in Urine. SCHUHMACHER AND JUNG.—After destroying the organic matters with hydrochloric acid and potassium chlorate, the mercury is precipitated and then evaporated by heating in a "gold asbestos" tube. The weight of the tube before and after indicates the amount of mercury.

Oxybutyric Acid and Its Connections With Coma Diabeticum. A. MAGNUS-LEVY.—"Beta oxybutyric acid occurs in severe cases of diabetes in amounts up to 20 to 30 grams, and during coma this amount increases to 160 grams eliminated in the urine." Such an enormous amount can not all be derived from the albumin, and Levy ascribes its origin to the fats or to some synthetic process. The conception of coma as an intoxication with some acids has always been refuted by the inefficacy of alkaline therapeutics. But Levy asert that this is due to the insufficient amounts employed. He advises daily doses of 200 grams of sodium bicarbonate, part injected into the veins in a 3 per cent. solution, the rest ingested, commencing and concluding with 60 to 100 grams a day. He succeeded in saving one very severe case by this means, but three others succumbed in spite of it.

Origin of Edema of Skin. R. MAGNUS.—Artificial hydremia alone, Magnus states, is not sufficient to cause edema of the skin; there must also be some lesion of a vessel, such as he produced experimentally by intoxication with arsenic, chloroform, ether, chloral hydrate and phosphorus. Edema can be produced by flushing dead animals and also by removal of the kidneys or tying the ureters. In the latter cases the endothelium of the vessels is injured by the action of the urea retained in the blood.

Berliner Klinische Wochenschrift, June 26.

Tabetic Attacks Accompanied by High Fever. P. K. PEL.—Tabetic attacks with fever have never been recorded before (See JOURNAL, xxxi, p. 1161), but in this case a glass polisher, 41 years of age, with typic tabes dorsalis, has had five attacks during the last few months, in which the vasomotor and heat regulating centers were evidently irritated, followed by irritation of the inferior and then of the superior spinal roots, then of the vomiting center and finally of the trigeminus fibers. The last attack is described in detail. The temperature rose abruptly with the pains, reaching 40.2 C.; pulse 150; vomiting, profuse sweating and, invariably, herpes labialis the next day; pains in the eyes, photophobia, lachrymation and congestion in the head. There were no morbid conditions aside from the tabes to account for the fever, which fell to normal in twenty-four hours, as abruptly as it rose.

Deutsche Medicinische Wochenschrift (Berlin), July 6.

New Method of Narcosis. J. GEPPERT.—This method is based on the principle of supplying a small amount of concentrated chloroform carefully measured, with the surrounding air

mixed just as it is inhaled. The gasometer is used as with the Bert-Dreser method, but without the disadvantages of the air-tight mask and the necessity for the assistance of an expert to manage the gasometer. Two volumes of chloroform to one of ether are poured into a long cylinder fastened to the side of the gasometer, and are forced out into a connecting bulb as the piston within, connected with the gasometer above, sinks in the tube. The chloroform mixture in the bulb is vaporized by a gas jet below, and the fumes rise in a short tube which opens into the tube, bringing the compressed air from the gasometer. The combination of air and anesthetic flows onward in the tube with the regularity of a stream of gas, and the amount passing is accurately determined by a graduated stop-cock. The tube ends inside the usual mask, a short distance from the nose and mouth, and the surrounding air combines with it as it is inhaled. Instead of a large amount of a weak solution, Geppert uses a small amount of a strong solution, the dose precisely determined by the regulating faucet. The apparatus is illustrated in detail. Ether in this combination is not explosive and does not ignite readily.

Protracted Remittent Fever in Tertiary Syphilis. CARO.—A case is described in which a remittent fever lasted six months and led to severe cerebral disturbances in a miller, 42 years of age, otherwise apparently normal. He was treated for tuberculosis and then for malaria, with no effect; there was nothing to suggest syphilis except a record of slight syphilis in youth, promptly cured with energetic treatment. When specific treatment was at last commenced recovery soon followed. The patient had consulted several of the most prominent German physicians, but all had erred in the diagnosis.

Automatic Lifter for Patients in Bed. MANDOWSKI.—A frame fits over the bed with a strong, soft cloth stretched over it, on which the patient lies, a hole cut out for the seat. A wide belt at each end of the frame passes over a pulley above and the frame is lifted by turning a crank without disturbing the patient. The entire contrivance costs but $6 to $10.

Archiv f. Gynækologie, lviii, 2.

Experimental Production of Impermeability of the Fallopian Tubes. L. FRAENKEL.—The research reported establishes that it is impossible to produce certain impermeability of the tube with either ligatures, partial resection, thermocauterizing or severing the tube. "The only reliable means to prevent conception is the complete ablation of the tube by a wedge-shaped excision out of the uterus and careful suture of the peritoneum."

Prager Medicinische Wochenschrift, 24 and 25.

Subcutaneous Injections of Brain Matter in Tetanus.—L. ZUPNIK.—The severe epidemic of tetanus last winter in the Prague Maternity, which caused the institution to be closed, failed to show any evidence of benefit from injections of Behring's serum. A case of pueperal tetanus that occurred recently in Pribram's clinic was therefore treated with 4 grams natr. brom. and 1.5 grams chloral a day, a treatment which has a record of 53 per cent. recoveries. Besides this, 21 grams of calves' brain substance were injected subcutaneously in four days, at a concentration of 1/12 to 1/5. The tetanic symptoms were much improved, but the patient died. It was impossible to determine the cause of death as the kidneys were found the seat of serious acute and chronic lesions.

Wiener Klinische Rundschau, July 2.

Hemorrhagic Myositis. H. SCHLESINGER.—An observation reported from Albert's clinic tends to prove the existence of an abortive form of polymyositis hemorrhagica. The hemorrhagic infiltration of the muscles was limited to one leg, and in the course of a year and a half only spread to the other gastrocnemius, while typical polymyositis affects nearly all the muscles and is rapidly fatal. The anatomic and clinical manifestations were similar to those in the latter, also the severe occasional cardiac symptoms, absence of fever and of suppuration, etc.; bacteriology negative. No traumatic origin could be discovered, except slight varicose troubles.

Wiener Klinische Wochenschrift, June 29.

Deceptive Pericardial Peritoneal Friction Sounds N. ORTNER.—In four personal cases a friction sound was noted over the heart, accompanying the contraction of the organ or the action of the diaphragm, which the autopsy disclosed was not of pericardial, but of peritoneal origin. The rhythm is the same as a pericardial sound, either like a locomotive or systolic-diastolic or exclusively systolic. It occurs as the consequence of accumulations of fibrinous exudations or tuberculous nodules on the liver, or on a portion of the intestine in contact with the diaphragm, and the corresponding part of the latter. This pseudopericardial peritoneal sound usually occurs loudest or exclusively over or to the left of the lower portion of the sternum, while the true pericardial sound is more distinct at the base of the heart. The peritoneal origin is indicated by the coexistence of tuberculous peritonitis or subdiaphragmatic perihepatitis, which were found in the five cases in which the sound has been noted to date, while the pericardium was practically intact.

Gazzetta degli Ospedali (Milan), July 2.

Early Hereditary Syphilis of Larynx in Infants. J. ARSLAN.—The symptoms first to attract attention are the alterations in the voice, disturbances in the respiration, cough and coryza with the absence of general acute symptoms. The affection seems to be more frequent in boys and can be divided into two classes, the hyperplastic and the ulcerative. In the latter the stenosis is more apt to be intermittent.

Laughing as an Aid to Expectorating. AJUTOLO.—The writer states that inducing a convulsive laugh by tickling is an excellent means to promote expectoration. It is usually followed by a coughing spell which expels the secretions in the alveoli dislodged and loosened by the contortions of the tickled subject.

Bolnitschnaya Gaseta Botkina (St. Petersburg), 2 to 4.

Diazo-Reaction in Scarlet Fever and Measles. J. LOWE.—From the study of 900 examinations the writer concludes that the diazo-reaction is not pathognomonic of any affection, but merely an indication of the severity of the affection. In doubtful cases it indicates measles. The earlier the reaction appears after the eruption, the more severe the disease. The more pronounced and the more frequent it appears in scarlet fever and measles, the greater the chances of a fatal termination. Variations in the temperature and injections of serum have no effect on its appearance. The urine of convalescents and healthy persons does not produce the reaction.

Russky Archiv Path. Klin. Med. e Bacteriologii, vii, 3 and 4.

Morphologic Changes in Blood With Liver Affections. G. VLAEV.—The writer has been studying this subject for years and announces that the nature of a liver affection and also its character can be determined by examining the blood. In the pernicious anemia of severe liver affections the reds fall below a million; nucleated reds appear and the number of whites increase to 50,000 to the c.c. The absolute number of lymphocytes or transition forms decreases, while the number of neutrophiles shows marked increase. These changes are less pronounced with cirrhosis of the liver; the whites do not rise above 20,000, the lymphocytes average 671; the transition forms, 511, while the neutrophiles increase to 11,300. No decided change occurs in the blood with catarrhal icterus or echinococcus. With pernicious anemia without any liver affection, the number of reds also diminishes and nucleated reds appear, but the whites diminish also and the above morphologic alterations do not occur. The blood also differs with the affections of the spleen. With leucemia, for instance, the number of lymphocytes is increased, and also the transition forms and the eosinophiles, but the number of neutrophiles is much diminished.

Crystal Formation in Gelatin Cultures. S. BARTOSHEVITCH.—"The crystals that form on the surface of bouillon-peptone-gelatin plate cultures as they dry vary with different bacteria and are characteristic of each species." With the anthrax bacillus the crystals are in the shape of isolated balls or flat slabs; with the staph. pyogenes albus, they form sheaves of three cornered prisms; with the bacillus subtilis, coffin-shaped crystals, etc. He considers that this fact indicates that bacteria which liquefy gelatin do not all derive the same substances from the culture-medium, and that this circumstance deserves special regard in the study of the bacterial metabolism.

Influence of Cold Baths on Number of White Corpuscles in Health and Disease. LAPINSKI AND SSVENSON.—Three-minute baths at 22.8 C. were tested in a very large number of cases of various diseases and the blood examined beforehand and at short intervals afterward. It was found that the baths

induced a transient accumulation of both reds and whites in the peripheral vessels, with consequent increase in the number of each, in the specific gravity and in the amount of hemoglobin. This condition soon subsided to normal, and the absolute leucocytosis claimed as the effect of the baths has no existence in reality.

Societies.

Chicago Neurological Society.

Regular Meeting, April 25, 1899.

DR. RICHARD DEWEY, the president, occupied the chair, and announced the subject for discussion to be

BRAIN TUMOR.

DR. HENRY M. LYMAN opened the discussion, saying: While sitting here this evening I have been thinking of various experiences and observations in the past, and I have been especially impressed with a remark that I once came across in one of Hughlings Jackson's lectures. In speaking of diseases of the brain, he said: "It is a great misfortune, but it is a fact, that the more experience a man gets in the matter of diseases of the brain, the less certain he feels in his diagnosis." The laity show a certain lack of respect for the conscientious observer who has the ability to confess his uncertainty or his actual ignorance with regard to the condition of the patient presented to him; but nevertheless such is the fact, and the more a man learns about the subject of diseases of the brain, the more uncertain he feels as to diagnosis in obscure cases. This is especially true of cerebral tumors.

The whole subject of tumors of the brain introduces us to one of the most variegated pictures of disease that it is possible to imagine, and when we consider for a moment how that may be, we realize that tumors of the brain vary in their origin, in their nature, in their seat, and give rise to various symptoms in consequence of their existence, their growth, and their encroachment upon the organs of which the brain is composed. We all admit the brain to be a vast congerie of subordinate structures, each one of which has its own definite function which is influenced by disturbances in other adjacent organs; consequently, the symptoms that result from the existence of tumors must be numerous. In many cases the existence of a brain tumor is not revealed by any sensory, motor, or focal symptoms, and it is in this subdivision of the subject that the greatest amount of obscurity probably exists. When we have a focal lesion, such as that produced by a tumor encroaching upon one of the cranial nerves, or developing, as in the case shown tonight, probably in the oculomotor nerves, or in the optic nerves, when we have definite symptoms that are easily recognizable and can be more or less accurately traced to their location, their cause and probable nature. In a case like this, it is probable that disturbance—although the history is not clear on that point—is due to the development of a tumor or tumors in the optic tracts. Sometimes it is impossible to determine where these tumors have been developed, whether in the optic commissures, in the optic tracts, in the corpora geniculata, or in the corona radiata of the brain substance itself. Even in the cortical structure we have the development of these new growths, which have a certain particular character, but are different entirely to those due to syphilis, tuberculosis, cancer, or anything of that kind developing in any portion of the optic nerve tract; yet they are likely to produce disturbance of vision, and if they develop in certain localities we have disturbance of nutrition of the optic nerve or of the retina. It is not impossible for the tumors of multiple sclerosis to develop in that portion of the brain which we call the retina; so that an example of brain tumor affords the greatest variety of locality, of effect, and of disturbance of the brain functions. But to speak of those brain tumors which exist in portions of the brain where there are no sensory or motor disturbances to be produced by their growth, they may exist for a considerable length of time, and may result fatally; yet before a post-mortem section is made there is nothing to indicate the fact of the existence of a tumor.

Dr. Bristow of London a few years ago read an interesting paper on certain cases of this kind that had come under his own observation. I believe he reported three such cases in which the only symptoms before death were those of a hysterical character. There was no paralysis, no sensory disturbance, the only disturbance being of an emotional nature of a very obscure character; and after death it was discovered that there was cerebral tumor. I have now forgotten the exact location of these tumors, but they were in the neutral portions of the brain, where no motor or sensory disturbance was caused by their presence. I will not enlarge upon this subject, because it is familiar to you all, but will merely describe, as a sort of starter for other speakers' thoughts, a case of very great interest that came under my notice some years ago.

A man came into my office one afternoon with the story that he had been attacked during the previous night with convulsions. He was not an epileptic patient; he had never had convulsions before, but said that at one o'clock in the night his wife aroused him by shaking him, and he found her manifesting great alarm when he came to himself. He told me that he had had a fit; he also had another one before morning. He had some difficulty in moving the left arm; he could walk well enough and could talk very well; his mind did not seem to be affected. He described to me his condition, as far as he was able to do so, and appeared anxious to know what was the cause of these nocturnal convulsions. He had never had an experience of that kind before. I examined him carefully and told him there was evidently some disturbance in that portion of the brain connected with his left arm. He came to see me occasionally for a number of weeks; the arm became more and more paralytic, the same condition extending gradually to the lower extremity, till at last it was difficult for him to walk about, and he ceased to come to see me for a time, so that I lost sight of him. One day I was requested to see him at his home. I did so, went to his house, and found him in bed, wasted to a skeleton. It seems that he had had a surgical operation performed, and I was told he had been under the care of an aurist; that for some reason or other he found his hearing affected, and he consulted an aurist and, so far as I could learn, from his description of his case, it was a supposed mastoid abscess upon the left side on which a surgeon had operated. It was plain enough from all the symptoms which developed, that the disease was progressing. There was headache, vertigo, vomiting, convulsions occasionally, and increasing loss of power until the whole left side was affected. He was now approaching death, and died a few days later. An autopsy was made, but I was unfortunately not notified of the fact, and did not see the specimen, but I was told by the physician who had the autopsy in charge that a large sarcoma was discovered in the right hemisphere of the brain occupying the ascending frontal and parietal convolutions. This explained all the symptoms that had developed; beginning undoubtedly in the arm center, gradually extending to the leg center, and finally by pressure and by a modification of the nutrition that comes from the development of these tumors resulting in the ordinary phenomena that are observed in classical cases of tumor of the brain.

Another case of interest that attracted my attention a few years ago was that of a boy, 5 years of age. He was brought to me from the country, and was suffering from pain in the head, with progressive loss of vision, vomiting, and unsteadiness in gait, so that he was obliged to stand and walk with the feet wide apart. It was perfectly clear that he was suffering from a tumor of the brain, and he died a few weeks after he had returned to his home. The physician was kind enough to send me the results of the post-mortem. An osteosarcoma was found springing from the base of the cranium and crowding upward until it involved the optic nerve-tracts. As nearly as I could learn from the description, which was not very exact, the tumor was a little behind the chiasm, so that it compressed the chiasm as well as the optic nerve-tracts. The diagnosis in such cases is comparatively easy, especially if the cases are under observation for some time. On the other hand, there are some cases that are exceedingly puzzling and obscure.

A few days ago a case was brought to me of this nature, a child suffering from vague and very commonplace symptoms. The only thing that seemed peculiar was that these symptoms had continued for a considerable period of time. The little patient had been taken to some of the best diagnosticians in the city, and the statement was made by the last one that there was a tumor in the posterior part of the brain. I could not discover any symptoms that would enable me to make any such

definite statement as that. If it was a tumor of the brain, it was one of those obscure growths which do not disturb sensation or motion, only declaring itself by persistence and the vaguest of cerebral symptoms.

EXHIBITION OF BRAIN TUMOR.

DR. A. F. LEMKE—This is a brain from a patient who died at the Kankakee Insane Asylum. The patient was admitted to the asylum with a diagnosis of general paralysis, this diagnosis having been made by several physicians who had sent her to the institution on account of dementia. It was my custom to examine the eyes of all new patients with the ophthalmoscope, and while going through the ward for this purpose I discovered accidentally that this woman had a double choked disc, which was very marked. I questioned her carefully and learned that the symptoms were those of brain tumor. She had had several attacks of vertigo and vomiting; and had had disturbance of vision for some time. She located her headache in the frontal region. When I first saw her at the hospital, all the reflexes were exaggerated. She had no focal symptoms; she had a very peculiar twitching of the face, which was bilateral. This occurred at intervals of a few seconds throughout the day. She finally had several convulsions, vomited a great deal, and after having been in the institution for about a year and a half she died. A post-mortem examination was made and this brain tumor removed. You can see the tumefaction of the left frontal lobe. The hemispheres were separated. On the right hemisphere in the frontal lobe you will notice an excavation made by the tumor. The tumor does not seem to have involved or infiltrated the brain structure, because we have been able to shell it out of the brain tissue without any difficulty whatever. It is about the size of a small orange, decidedly irregular and rough, made up of a good deal of connective tissue, and the microscope shows it to be a sarcoma with much fibrous tissue.

The interesting feature of the history in this case is that a tumor as large as this was seems never to have created what we could consider focal symptoms, and for that reason the tumor was not located ante-mortem.

I presume it is not out of place to speak of the possibility of this tumor having been removed surgically. It shells out of the left frontal lobe so easily and readily that some surgeons have expressed an opinion to the effect that it might have been removed surgically with very excellent results. Had this been done, it would have left quite a defect in the brain, but the woman's mental condition was about as bad as it could be, and, at any rate, a surgical operation might have been attempted if the tumor could have been located.

DR. HUGH T. PATRICK—I distinctly remember examining Dr. Lemke's patient when she was practically blind. I was unable to make out any focal symptoms. She then had optic nerve atrophy following an optic neuritis. I remember, too, that she had an anxious, careful, wide-footed gait, which, although rather natural for a blind person, was also somewhat suggestive of cerebellar disease. There was some inco-ordination of gait, and, while in frontal tumors this has been attributed to polar pressure on the cerebellum, my opinion is that it is not necessarily dependent upon cerebellar pressure, but is due to general motor interference by pressure.

DR. SYDNEY KUH—What was the nature of the mental disturbance?

DR. LEMKE—Merely a dementia.

DR. KUH—Any exaltation?

DR. LEMKE—None whatever.

EXHIBITION OF SPECIMENS OF BRAIN TUMORS.

DR. HUGH T. PATRICK—I have here three specimens of tumor of the brain, each one of which seems to have a separate item of interest, and all go to show more or less the truth of Dr. Lyman's inferential statement that the typical cases of brain tumor are the atypical ones. Most of them really are atypical. I will take my cases in chronological order.

This is the brain of a girl who was 16 years of age when I first saw her, in April, 1895. In July, 1894, she had two prolonged convulsions, another one in October, and up to the time when I saw her, it was supposed to be a case of hysteria, because of the peculiar character of the fits. After these general convulsions which she had in July and October, she began to complain of pain in the right side of the head and right eye, and a little later—in December—she had a number of local fits. She worked in a store, and every few days she would have a clonic spasm of the left arm, which, after a short time, involved the face. The arm would jerk and twitch in a peculiar way so that she would try to hold it with the other hand, and the other girls would laugh at her. When I saw her she was confined to bed with headache of the right side of the head and right eye, left hemiparesis and strabismus. There was diminution of sensation on the left side; muscular sense was much impaired and there was the inco-ordination which ordinarily accompanies this symptom. She had double optic neuritis.

On account of her age and lack of evidence of syphilis, on examination, I advised operation at once, as the girl seemed to be in a critical condition. She could walk, but clumsily, and as I had seen not long before this a case of tumor with a sudden apoplectic termination, I advised immediate operative interference, rather than to await the results of syphilitic treatment. I had a talk with Dr. Senn before the operation was done, and said that the growth would probably be a flat sarcoma which sometimes spreads out on the surface, or it would be a deep-seated, subcortical growth on account of the extent of the paralysis. It did not seem to me that a small tumor in the cortex could account for the symptoms. The patient was accordingly operated upon, a large opening being made over the arm center. Nothing was seen; although the intracranial tension was great, and the brain pulsated perfectly; by palpation through the dura nothing could be felt. Surgical considerations aside, I was in favor of making an incision into the brain, but Dr. Senn thought he would surely get an enormous cerebral hernia, and so this was not done. The operation, however, relieved the girl completely for at least three months; that is, the optic neuritis nearly disappeared, the strabismus disappeared, as did practically her hemiparesis. She regained her normal disposition, which, before operation, aside from mental hebetude, had been irritable; she became cheerful and happy and was quite herself. She had no treatment of any kind for about three months following the operation, when the headache returned and she was put upon iodids with some temporary relief. Again, her headache returned, and she did not come back to me. The next thing I heard was that Dr. Fenger was going to operate for the removal of this tumor. I went to see the operation, but it was decided to put the patient on specific treatment, namely, iodids and mercury, which relieved her for about three months. The patient then drifted from one physician to another, until one surgeon, doubting the diagnosis of brain tumor, aspirated supposedly the lateral ventricle, with instant relief. The headache disappeared, but soon returned. Aspiration was again resorted to a number of times, and this being so successful, the apparent conclusion was that aspiration with injection of iodoform emulsion would effect a cure. This was done and the patient died in a few hours.

When the brain was removed, nothing was seen on the surface, but on bisecting the right hemisphere a large, soft growth, broken down and cystic in the center, was seen. It occupied about half of the hemisphere, was subcortical, but had become so nearly cortical that in handling it before it got into my hands the very thin layer of cortex covering the tumor was broken through. The point that broke through was exactly in the arm center. The tumor is a glioma. The case illustrates how brain tumor may, for a time, simulate hysteria, how a subcortical growth may cause typical Jacksonian attacks, what an enormous neoplasm will sometimes be tolerated in the brain and what marked relief may be afforded in cases of non-specific tumor by the administration of large doses of potassium iodid.

This is a brain taken from a patient whom I saw several times, having been called in consultation with Dr. Babcock. He will remember her general medical history a good deal better than myself, as my notes have been mislaid, and I shall have to give it largely from memory. As nearly as I can remember, the first symptom of brain tumor in this case was a typical Jacksonian fit affecting the left arm. She was carrying something at the time and was about to open her door, when she had a convulsion limited to the arm. Soon after, she had another, attended with loss of consciousness. After this the fits were confusing; they were often of the general character of a petit mal, and after she was under observation for some time and we obtained a more distinct and clear history of these fits, it was found that they sometimes began

on one side, and sometimes on the other. The patient was about 40 years of age. When I first saw her I thought it was more likely a case of brain tumor than anything else, and that was about all anyone was justified in saying. There was at that time a little difference in the deep reflexes of the upper extremities. I saw her again some time later, and was reasonably sure that choked disc was developing. This woman had distinct mental symptoms; after a short time her memory became impaired; she had more or less mental hebetude; was nervous and depressed. How much the epileptoid attacks had to do with the mental deterioration I do not know. But she finally died. Dr. Haven of Lake Forest obtained a post-mortem examination, and sent the brain to me.

The tumor is a little smaller than the last joint of one's thumb, and it was a question when the brain was cut whether it was a tumor at all. It has been examined microscopically, and it is a glioma. It is subcortical, and located not in the arm center, but in that for the leg, or perhaps comes down to the junction of the leg with the arm center in front of the fissure of Rolando. I had located it behind the fissure of Rolando. It has not reached the surface. Could it have been located during life and operated upon, I believe the tumor could not have been recognized by an incision in the brain. It was with great difficulty that it was recognized post-mortem, the appearance being as much like a slight ecchymosis as anything else. In structure and consistency the growth was scarcely to be distinguished from normal gray matter of the cortex, and with the hemorrhage inseparable from an operation, I am convinced no difference could have been seen. From this little tumor at the vertex the patient's condition was very like that of brain syphilis; there was a sort of hebetude; she was sleepy and dull; she could be aroused and would answer rationally, or sometimes a very little at random, a condition so frequently found in syphilis of the brain. She was given large doses of iodid and mercury, to no purpose, and this may have contributed to her great prostration, but medication was withdrawn some weeks before death. It is incomprehensible how a small tumor like this could cause pronounced symptoms for a long time and finally death.

There is another interesting point connected with the case. Here is a small tumor of the convexity which has infiltrated the brain substance, and has caused no displacement, and it is not easy to see how it could cause increase of pressure, yet the patient had optic neuritis. I could compare this, for instance, with a tumor case in which I missed the diagnosis, largely on account of the absence of optic neuritis, and also because of the known fact that the man had had syphilis with unmistakable skin lesions. When, with other brain symptoms, he began to have typical Jacksonian fits, the supposition was that he had syphilitic trouble near the face center, the face and tongue being more affected, sometimes exclusively. But he was treated with heroic doses of specific remedies to no purpose. He then returned to another city, whence he came to see me and where he had been treated for epilepsy by antipyrin, with some benefit. One day he fell dead on the street, and at the post-mortem examination a tumor the size of a hen's egg was found in the face center. This man had no optic neuritis, and yet when I saw him he must have had a tumor not only four or five times as large as this one, but located much nearer the base of the brain, the optic tracts, where it would be much more apt to cause choked disc.

The present case also shows how a tumor located directly in the motor area may cause no appreciable paralysis and may give rise not only to general epileptoid attacks, but to fits beginning distinctly on the same side of the body.

The third brain I have to present was removed from a patient whom I saw Dec. 15, 1898. The history of the case is that of a middle-aged traveling man, who first noticed in the summer of 1898 that he was a little more nervous than he should have been, that he was a little dizzy at times, and particularly that he had trouble in making out his reports accurately. In sending in accounts and orders and in making up papers of any kind or in keeping books, he was apt to make errors. When his physician related the case to me I concluded that it was probably one of general paresis, and it comes in very nicely with Dr. Lemke's case, because there was a history of a little dizziness, some nervousness, impairment of memory, inaccuracy in making up accounts, and finally, the patient had several fits. He had, at first, what appeared to be fainting spells, and finally general convulsions. For two or three months previous to the onset of these convulsions he had trouble in reading and writing. On examination, several interesting conditions were found; among them weakness on one side of the body, homonymous hemianopia, word-blindness, motor aphasia, and double choked disc. Vision was rather poor, which might have been ascribed to the optic neuritis, but the difficulty in reading was clearly due more to word-blindness than to failure of vision. When I saw him the motor aphasia was more pronounced than the sensory (visual) aphasia, which led me to make a mistake as to localization. I got the Wernicke sign, and from this, with the motor aphasia, I concluded that he had a tumor in the temporo-sphenoidal lobe, deep in, but near enough to the base to compress the optic tracts. This was a mistake. At the post-mortem a subcortical tumor was found in the parietal lobe, extending back as far as the parieto-occipital fissure, and forward almost as far as the operculum. If I had paid more attention to his word-blindness, and less to motor aphasia, I would have located the growth a little farther back. Dr. Herzog has made a microscopic examination and it, like the other two, is a glioma.

I have seen two cases in which a diagnosis of general paresis was made by eminent men until the ophthalmoscopic findings made it necessary to re-examine, when other symptoms of brain tumor were found. At least two cases of brain tumor have come under my observation in which there was mental exaltation, such as goes with general paresis. One was a girl with a frontal tumor—the diagnosis being made ante-mortem—on the right side. She has no delusions of grandeur, but she had the flippant, happy, elevated, pseudo-witty manner of the general paretic. I have still under observation a man who undoubtedly had, and now has the remains of, a right frontal gumma. He was very optimistic regarding his condition, his future, and particularly regarding an invention on which he was working, or claimed to be working, and still shows somewhat this mental elevation, with a tendency to joke and laugh without sufficient cause. In frontal tumors this has been noticed by Oppenheim, Williamson, and one other author, whose name I cannot at present recall.

I saw last winter a case of brain tumor which for a time closely simulated general paresis, in a man who peddled soap to grocers. He first noticed that he could not keep track of his route. He forgot his customers; he forgot to deliver orders, and became absent-minded. The family then remarked that he would start for the stable or another part of the house and forget his object. Not long after, he was found unconscious in his wagon, having evidently had a fit. In a word, that is the history of general paresis; gradual mental failure and a fit of some kind.

I might mention another point in connection with the girl who exhibited mental exhilaration. I saw the case about two and a half years ago at the clinic of the Northwestern University Medical School. She became worse during the short time she was under observation, and began to have slight fits, which she had never had before. I told her aunt, whom she was visiting, that she might as well be sent home, as nothing more could be done for her, and that she could not live long. A couple of months ago I wrote the parents asking to know of the further course of the case, and when the girl died, and I received a letter from them saying that she was not dead; was, indeed, somewhat better, but was having severe fits.

In connection with that case, as also illustrating the occasional slow course of tumor, I will mention that of a man who first came under my observation three years ago in January. He presented himself with a history of severe headaches for the last four years. I do not know whether the headaches were caused by brain tumor or not, but they apparently were. At any rate, he gave sufficient symptoms to warrant a diagnosis of brain tumor, including intense double optic neuritis with homonymous hemianopia. Since under observation, he has presented no localizing symptoms other than hemianopia. He never has had any paralysis. The knee-jerks, although they could be obtained only with reinforcement, were always thus obtainable. His headaches, although very intense, were relieved for a considerable period by potassium iodid, notwithstanding that there was no evidence of syphilis. He passed

from observation, and I supposed he was dead until he walked into my clinic a few days ago. He is now blind, optic atrophy having succeeded the choked discs. I believe there is a tumor in the man's brain which has been latent for three years. He has had no headache during this time, but now it is beginning to return.

While I was lecturing on him at the Policlinic, I was hurridly called to see a case that offers a striking contrast to the two just mentioned. There was a history of severe stomach trouble for a few weeks; vomiting; headache; coated tongue; high-colored, scanty and exceedingly acid urine; foul breath; no appetite, and general prostration, and as these symptoms had followed upon a period when the patient had been eating and drinking more than usual for him, it was natural to conclude that his was a gastro-intestinal trouble. The headaches required morphin on one or two occasions to relieve them. Suddenly he became comatose, and a few hours later, before he died, double optic neuritis was discovered, and then it was learned that for several days his wife had noticed that one arm and hand were clumsy and noticeably disabled, and that in getting out of bed the leg on the same side had given way several times. The attending physician also recalled that for about a week the patient had been somewhat changed mentally, being rather inconsequent, indifferent, and unconcerned about his condition. The supposition is that this was a case of brain tumor which shows, in contrast to the other cases, how exceedingly rapid the course may be.

I spoke a moment ago of apoplectic termination in a case of brain tumor, aside from death due to sudden heart failure. About four years ago I saw such a case in a man who gave a history of slight numbness on the right side which had existed for about three months; this was followed by headache and vomiting, and then a sudden right hemiplegia, and it was when the last came on that I saw him. He then had homonymous hemianopia, undoubtedly due to extensive thrombosis. He had intense double optic neuritis. On that symptom with a history of progressive numbness on one side and headache following and some vomiting, I made a diagnosis of brain tumor. The hemiplegia, which was very pronounced and accompanied by complete aphasia, did not improve materially as long as he was under my observation, nor did it grow worse, and I believe that the thrombosis shut off the blood-supply to the tumor, and that consequently it remained latent.

A word regarding operations for the removal of brain tumor. The cases presented illustrate how futile surgery is. My personal experience is this: In over 35 cases seen in four and a half years, in which I made a diagnosis of brain tumor, I have advised operation in only two for the removal of the growth. The first was the girl whose brain I first showed this evening; the other was a case apparently very favorable for operation, and in that case operation was declined, and I now learn from Dr. Church that the patient is alive, three years afterward, so that as far as my own limited experience goes, the operative treatment of brain tumor does not hold out much hope: 1, from the fact that so few cases can be operated on; 2, the results are poor in those cases that are operated on.

DR. SYDNEY KUH—I would like to report, very briefly, a few cases which illustrate the difficulties we encounter when we attempt to make a diagnosis of brain tumor. The first patient was an old man, whom I did not see until the post-mortem was made. He was under the observation of Professor Vierordt, in the Policlinic at Heidelberg, for quite a while. A diagnosis of tumor of the liver was made, and there were absolutely no symptoms indicative of a cerebral lesion. The patient had violent pain in the region of the liver; the diagnosis was that of secondary carcinoma of the liver, the primary lesion being thought to be in the stomach. It was necessary to give hypodermics of morphia to relieve the pain. Gradually the morphin lost its effect, and one day, when an unusual dose was given, the patient became comatose, which was attributed to the injection, and within twenty-four hours he died. Post-mortem examination revealed no lesion in the stomach and a number of small tumors in the liver. Besides this, a tumor, very nearly the size of a hen's egg, was found in the cerebellum, which had destroyed all of the vermis superior of the cerebellum with the exception of a layer, which was not thicker than ordinary cardboard. Here was a case in which the very part of the cerebellum was destroyed, the destruction of which is supposed to give rise to cerebellar symptoms. Up to twenty-four hours before the man's death there was not a single symptom of brain tumor, though the tumor must have existed for a long time.

Another interesting case I mentioned briefly at a meeting of the Chicago Medical Society a few weeks ago. It was that of a boy of 13 years, who was brought to the physician by his parents on account of short attacks of mental disturbance, which were followed by violent headaches. As far as I can remember, he had three attacks before I saw him. I had occasion to witness one of the attacks, and they were as typical as anything could be of mental epilepsy. During the attack which I saw, he had hallucinations, and the things he saw were mostly in red—a supposed characteristic of the epileptic hallucinations. A diagnosis of epilepsy was made, and some time afterward we were very much surprised to find symptoms of brain tumor, from which the boy died. It proved to be a gliosarcoma of the brain.

A third case of some little interest is one of a child, 4 years of age, who came under my observation in the late stages, and no accurate history of development of the disease could be obtained. At the time I saw the child secondary atrophy was well developed and all the other general symptoms of brain tumor. The skull, which had been of normal size, was very much larger than the normal, and one could place his fingers into the sutures, they having all opened up again. But the most striking feature about the case was Jacksonian epilepsy, which affected the right side of the body. In that case a post-mortem was made, and a large tumor was found, which had destroyed the greater portion of the right hemisphere of the brain, so that we had here Jacksonian epilepsy on the side of the tumor. The explanation for this peculiar state of affairs was probably this: that the tumor on the right side of the brain pressed upon and irritated the left hemisphere, and in that way caused Jacksonian epilepsy.

Dr. Patrick has called our attention to the fact that in one of his cases a small lesion had caused death of the patient. I recall the case of a man, about 33 years of age, who had for some time suffered from the general symptoms of brain tumor. He died within a day after I had first seen him. At the post-mortem a cyst not larger than a small cherry was found in one of the hemispheres of the cerebellum. There was absolutely no sign that it had developed recently. A pathologist examined the brain macroscopically, but I do not know whether a microscopic examination was made or not. He was of the opinion that the cyst was congenital, and the fact that so small a cyst of 33 years' existence should cause sudden death is difficult of explanation.

In speaking of the surgery of brain tumors, there is one symptom which I think is of some importance in determining whether there is any probability of giving relief by means of an operation or not, and that is the occurrence of headache. Where headache in tumors of the brain is a late symptom, it is certainly more probable that the tumor is deep in the brain. Where the headache occurs at an early stage, it is more probable that the tumor is either cortical or subcortical, the pain not being due to any change in the brain proper, but to irritation of the membranes of the brain. I know of one case in which Jacksonian epilepsy occurred and an operation was not performed because of the late occurrence of the headache, and in this case the post-mortem showed that the refusal to operate was justified, the tumor being very deep down.

In regard to the case of Dr. Lemke, Dr. Patrick mentioned the fact that he noticed something similar to cerebellar ataxia. It is about ten years since Bruns reported cases of tumor of the frontal lobe with cerebellar ataxia. Since then so-called cerebellar ataxia has become a well-recognized symptom of tumors of the frontal lobe.

Cases of brain tumor with symptoms of hysteria, such as Bristow published some years ago, are not rare. I recall one case, published by Schoenthal in the *Berliner Klinische Wochenschrift*, in which a diagnosis was made of hysteria, and which seemed well established until the patient died and a tumor of the brain was found post-mortem.

(To be continued.)

Chicago Society of Internal Medicine.

Meeting held May 25, 1899.

The subject for informal discussion was

PROPHYLAXIS AND MANAGEMENT OF APOPLEXY.

DR. N. S. DAVIS, JR. opened the discussion, and said: The causes of apoplexy, almost uniformly, are thickening, and hardening, and brittle condition of the arteries. This condition is usually not confined to the cerebral arteries, but is common to many arteries in various parts of the body, although the lesion is frequently more marked in the cerebral than in other arteries. The exciting cause of rupture of an artery is change in blood pressure. It may be the result of sudden physical exertion; sometimes it is produced by intense mental strain or by overaction, usually temporary, of some of the viscera, as of the digestive organs. Occasionally a change in posture is the exciting cause of increased blood pressure. Unquestionably, in some instances, distension of the bladder has an influence, particularly in old people. A very considerable distension of the bladder increases it, and the recumbent posture heightens it still more. Frequently the occurrence of apoplectic attacks at night can be explained in this way. In very many instances patients first discover that they are paralytic when they are awakened by an inclination to make water. I speak of the milder cases which are met with every now and again. Brittleness of the arteries, or permeability, or easy rupture of them may be caused in other ways. Miliary aneurysms of the cerebral vessels are common. These are usually due to the same cause or causes as ordinarily produce thickening, hardening and brittleness of the arteries generally, and are only a part of the atheromatous state. They, however, occur also as a result of syphilitic poisoning, and less frequently from other infections. With these facts before us we can to some extent, reason as to prophylactic measures.

Prophylaxis is rarely applied to the sclerotic changes in the arteries, for these lesions are fully developed, as a rule, when a patient consults his physician. Abstemiousness—diet, in mental and physical work, will help to prevent the growth of the lesions. The iodids can be given to lessen arterial tension, and to some extent, to influence the fibrotic changes that are taking place in the arteries throughout the body, but they exert only a slight influence on the fibrous or atheromatous change; indeed, it is so slight as to be not demonstrable in many instances. The long-continued use of the iodids, which is so often recommended in such cases, is useful because of their influence on arterial pressure, more than on the fibrous or sclerotic changes in the arterioles. Although the underlying arterial changes can be influenced only slightly, blood pressure can be to a considerable extent. Unusually high arterial tension must be lowered. Patients should be cautioned against overexertion, either physical or mental, and against overloading and overtaxing the digestive organs; they must also be cautioned to maintain regularity of bowel movements, as high arterial tension is often produced by constipation, and by overloading the gastro-intestinal tract. By dietetic restrictions, and by instructing patients with reference to the importance of emptying the bowels regularly, we can to a considerable extent prevent continued ill-effects which may be produced by the absorption of toxic materials from the intestinal tract. These toxins are believed by some to be the immediate cause of the arterial changes. It is, therefore, very important to maintain cleanliness of the gastro-intestinal tract in order to influence arterial pressure and to prevent absorption and the ill-effects of toxic agents on the arterioles generally.

Aside from these hygienic measures, we can also help to prevent the high arterial tension by the use of such drugs as the nitrites and the iodids. The nitrites usually produce a fleeting effect on arterial tension. They are to be used temporarily when the results of high arterial tension are particularly threatening—I mean when there are symptoms of pressure on the brain, or when there are symptoms connected with other organs of the body, showing that there is increased arterial tension, possibly persisting for some days. It is during this time that the nitrites can be advantageously used. The nitrites must be rather frequently administered, or else we get very temporary effects from them. The effects are so transitory that they can hardly be regarded as producing much of a prophylactic influence. On the other hand, the iodids produce very much less influence on arterial tension, but what effect they do have is much more prolonged; they are therefore decidedly better for persistent use. In almost all cases in which it is desirable to lower arterial tension, they are the drugs to be preferred. Of the iodids, unquestionably the iodid of soda is the best for long-continued use. It is necessary in some cases to give the iodids in doses of considerable size; in others moderate doses will produce the desired effect; by moderate doses I mean from 8 to 10 or 15 grains at most.

In giving the iodids, it is generally recommended, by therapeutists, to give them for long periods of time, and for the particular purpose of reducing arterial tension they can be continuously given for weeks. An intermission of from one to two weeks should be advised, every four to six weeks, and during the intermission, if it is necessary to use anything for the control of blood pressure, use the nitrites. The iodids should not be employed so continuously that the digestive organs are deranged by them.

DR. CHARLES W. PURDY—The prophylaxis of apoplexy may be summed up in "measures to lower tension." Of those means we might take the hygienic, and under that head would come clothing. We know that the skin contains a large amount of blood ordinarily, and a sudden chilling of the skin throws quite a volume internally which goes to swell the circulation in the larger vessels, and an equable temperature of the skin is, therefore, a very important point in the hygienic treatment, as it tends to equalize the circulation. The regulation of the bowels is a very important matter, and nothing tends so quickly and so sharply to withdraw the blood from the cerebral vessels as a purge. When there is reason to believe or to fear that apoplexy is impending, the best remedy is a sharp purge. But that comes more properly, perhaps, under the head of medication. The condition of the stomach and the quality of the food are very important in their hygienic relationship. For instance, it is very important that all foods that tend to increase tension should be cut off, mostly the animal foods and nitrogenous vegetables. The amount of exercise should be regulated. A patient should not be allowed to exert his full strength at anything. Anything calling for sudden efforts he should be cautioned against. With regard to meals, it is an excellent plan to have frequent ones. Rather than large meals, there should be more frequent ones, perhaps four meals a day instead of three, and food should be strictly limited in quantity. These patients should get up from the table feeling they can eat more. Under no circumstances should they eat heavily, and, above all, they should not eat bulky foods, soups, etc.

There is one point Dr. Davis did not mention, which is an accompaniment of apoplexy, and statistics will show that it runs up in some instances to 60 or 80 per cent., and that is uniform enlargement of the left heart. We can understand why this is. With a powerful left ventricle, with atheromatous or degenerated vessels, we can readily see how blood tension must be enormously increased. Such hearts should be treated, and it is surprising how frequently and rapidly the left heart can be influenced by dietary treatment. It is not at all uncommon to find a left ventricle that measures 12 cm. from mid-sternum to the left border, taken down on a non-nitrogenous diet in from four to eight months, so that it will measure 9 or 9.5 cm. We should invariably inquire into the condition of the left ventricle, because it underlies a large number of these cases, and the diet should be arranged accordingly.

The medicinal treatment, as Dr. Davis very practically and concisely states, is limited to the vasodilators, of which the iodids in moderate doses are perhaps the best for continued use. The nitrites are evanescent in their effects, unless they are frequently repeated, and the doses frequently increased. In these conditions I give the iodids after meals, preferably the iodid of sodium; about an hour after iodids I give nitroglycerin.

It is important that we should bear in mind certain things we should not give to patients with apoplexy, and among those I would mention digitalis and that group as being exceedingly dangerous. The patient should be cautioned regarding their use. Those drugs should not be taken under any circumstances. The same may be said of opiates.

There is one more point that may be said with reference to

drugs, namely in the use of bromids. Bromids have an excellent effect on the nervous system. We know the nervous system influences tensions very much. It does more than that; I believe full doses of the bromids lessen the actual volume of blood in the head. Alcoholics should be absolutely avoided.

DR. HUGH T. PATRICK—I do not know whether I correctly apprehend the subject for discussion, but as I take it, we are talking about the clinical appearance or syndrome that is called apoplexy. The first point which I wish to make, and which I consider to be exceedingly important, is this: that in the current understanding of practitioners, which understanding I think has cropped out so far in the discussion, apoplexy is taken to be synonymous with cerebral hemorrhage. The term may be used in that sense, which is certainly a false and unjustified sense. The term apoplexy means a sudden attack involving consciousness more or less, and accompanied by more or less paralysis, generally of the hemiplegic form. If we take this general and proper acceptation of the expression, then the more frequent cause of apoplexy, taking the grave and lighter cases together, is not hemorrhage. When we speak of apoplexy as due to thrombosis, vascular occlusion or vascular rupture, a primary and fundamental distinction must be made clinically as well as pathologically, because the prophylaxis and the management of the state itself must be radically different in the two conditions. To begin at the beginning, the premonitory symptoms of apoplexy have been alluded to. There are no premonitory symptoms of cerebral hemorrhage, properly speaking. Cerebral hemorrhage is caused, in the vast majority of cases, by the rupture of a miliary aneurysm, and a miliary aneurysm causes no symptoms whatever. Therefore, the premonitory symptoms of cerebral hemorrhage, properly speaking, are *nil*. They belong to the condition of the heart and of the kidney, and not to the condition of the cerebral vessels. When there are marked premonitory symptoms, aside from those of uremia, and hypertrophy of the heart, etc., they are indicative of vascular occlusion, i. e., of thrombosis, and not of hemorrhage. That is a distinction which I think is exceedingly important clinically. On this distinction must be based the prophylaxis. The prophylaxis of cerebral hemorrhage has been exceedingly well dealt with. We cannot often predict a cerebral hemorrhage before it occurs, but we can anticipate thrombosis in many cases because the premonitory symptoms are frequent and numerous. For instance, vertigo, of which Dr. Purdy spoke, is exceedingly rare as a premonitory symptom of cerebral hemorrhage, aside from its occurrence as a symptom of chronic Bright's disease, which exists in a person who is going to have a hemorrhage. A vertigo caused by the local circulatory changes which precede cerebral thrombosis is exceedingly frequent, and in such cases we frequently get a history of repeated attacks of vertigo; perhaps an attack of aphasia, then an attack of numbness, with weakness in one extremity, perhaps more frequently an arm, possibly affecting the face and side of the tongue, which subsequently becomes more marked, and a complete hemiplegia develops. This is a case of thrombosis, not hemorrhage. Such a history is typical of thrombosis. In the prophylaxis of thrombosis two things are to be considered: 1, the weak heart, and slow circulation which generally exists; 2, diminished caliber of the cerebral vessels. Common sense will indicate what is to be done in most of such cases.

To go back to the original point, the practitioner must be clear in his mind whether he has a case of cerebral hemorrhage or of cerebral thrombosis. Of the two affections, probably thrombosis is the more frequent. Alcoholics may not only be given, but should be given. In more than one instance have I seen a patient with thrombosis, apparently very imminent, who had been dieted, taken off of meat and put on restricted diet, and his arterial tension lowered when it was already too low, improve considerably on rather liberal libations in the form of beer, and on remedies which increase arterial tension and increase the rapidity of the arterial current and strengthen the heart. Those are also the principal considerations in the management of the apoplectic state itself. The great majority of cases I see are in consultation with other physicians, and I was almost tempted to say that I have yet to see the first case in which a diagnosis of thrombosis had been made; that would not be true, but it would be nearly true, because in almost every case of apoplexy which I see with other physicians, a diagnosis of hemorrhage has been made, simply because it has been a more or less pronounced attack of apoplexy. I believe the majority of cases are not due to cerebral hemorrhage, but to thrombosis, with an occasional embolism, which is rare. Here, again, the treatment, based on a faulty diagnosis, has been faulty. The head has been raised; cold has been at once applied, sinapisms, and active purges., etc., to lower arterial tension, especially in the brain. In other words, every possible means has been employed to favor the formation and continuance of the clot which has already formed in the vessels. I am convinced that many a mild case of apoplexy, due to thrombosis, has been aggravated by treatment directed to the misunderstood symptomatology, and that many a patient with impending thrombosis has had the process hastened and brought about by remedies directed to the prevention of cerebral hemorrhage. This is not the time to make up the diagnosis either before or after the fact, but in my opinion it is exceedingly important to make a trenchant distinction, because such cases of thrombosis, as well as cases of cerebral hemorrhage, are, and ought to be classed as apoplexy.

DR. M. L. GOODKIND—I agree fully with the remarks made by Dr. Patrick. In those cases in which arterial tension is very high and hypertrophy of the left heart is marked, I have found aconite a very useful agent. Where nitroglycerin has been given in a similar manner, and in solution, where the amyl nitrite or iodid of potash has been used and failed, patients have frequently responded to aconite.

DR. JOHN H. HOLLISTER—I desire to endorse the view expressed by Dr. Patrick, that it is entirely essential for us to determine the nature of a condition before formulating treatment. The condition in which we have incipient vertigo, gradual increasing arterial pressure and increased action of the heart, incompressible pulse and lividity of countenance is essentially different from that in which almost the opposite condition prevails, and in which we have evidence of a sudden, perhaps slowly progressive, paralysis, resulting from embolism. I recall a case of very pronounced hemiplegia which recently came under my care, and from which the patient is now slowly recovering. It was the result of embolism. The patient had previously suffered severely from inflammatory rheumatism; there were vegetations on the valves, and, as near as I could diagnose the case, there was not only retarded circulation, but there was a slight cerebral hemorrhage resulting from it.

With reference to cases in which immediate, and, what we may call heroic, treatment is demanded, particularly in those of severe blood determination to the head and great pressure, I recall the time when the ruling instruction was venesection. I have on several occasions, in emergencies, when my lance was not at hand, placed the patient as soon as possible under the influence of tartrate of antimony. Its sedative influence on the vagus is pronounced, and it answers the purpose admirably if not carried to the point of emesis, and one can guard against it if accustomed to the use of antimony, by holding it there for a period of from twenty to twenty-four hours. I recall three or four cases in which blood pressure was lessened by the administration of tartrate of antimony, and the patients were brought to the point of nausea, kept in that condition, and the pulse being reduced to 45 and 50 per minute. I consider tartrate of antimony preferable to either of the articles that I have heard mentioned to-night in cases of emergency.

In regard to the other cases in which we have miliary hemorrhage, they need sustaining treatment, lessening the volume of circulation by catharsis and by a general course of treatment. As has been stated, there are many cases in which we need to sustain the patient rather than produce a depressing influence on the nerve-centers.

With reference to persons of sedentary habits and those who are constipated, men who are actively using their minds day after day in intellectual work are making a fearful mistake in this country. I think we are witnessing direful results very frequently by the rapidity with which that class of men are taken off. We had an instance of this in one of our noted politicians not long since, a great statesman, who, after having made a speech, went to the Palmer House, and died that evening of cerebral hemorrhage, as was verified by autopsy. This

class of men and those who are following them should change their course of life in some respects. While intellectual labor is essential, there must be more periods of rest; and not only that, we are making a great mistake when we do not require of our active business men more manual exercise. There should be a systematic training of the muscular system so as to equalize the circulation throughout the different organs of the body. Our intellectual men should adopt a systematic form of manual exercise so as to avoid collapse at the age of 60 or 70, diverting the blood from the nerve centers and notably of the brain. If the circulation was improved by massage of the viscera, by a series of exercises well directed to the activities of the body, we would in another generation change the mode of living, which is certainly becoming a marked feature of the conditions of our intellectual men. I have had this impressed on me within the last ten years as to the many eminent men who have been taken off within from five minutes to five hours, due largely, I think, to the fact that their methods of living have been erroneous in this respect.

DR. HAROLD N. MOYER—I would like to emphasize a few points made by Dr. Patrick. There is no question but what apoplexy includes a number of conditions. It is very essential to a correct diagnosis, that we differentiate between them. From the remarks of Dr. Patrick, one is perhaps led to the inference that the diagnosis is easy.

DR. PATRICK—Oh, no! I did not mean that.

DR. MOYER—The diagnosis of thrombosis and embolism is one of great difficulty, and, as Dr. Patrick points out, the treatment of those two conditions is diametrically opposite. What is suitable for one is generally unsuitable and improper for the other. Take, for example, hemorrhage. If it is present, we should elevate the patient's head in a semi-upright position. On the other hand, if he has thrombosis he should lie in the prone position, so that in cases of doubt regarding the diagnosis between the two conditions, I should feel inclined to split the difference and put them half way up, so that it comes near fitting both conditions. There are forms of cerebral hemorrhage that are strikingly like thrombosis, and I would not agree with him that a case of cerebral hemorrhage is wholly devoid of premonitory symptoms. I now speak of those symptoms which belong to the progressive apoplexies in which there is a slow effusion of blood, and in which the diagnosis between the two conditions is practically impossible.

The point raised by Dr. Hollister, regarding intellectual labor in its relation to brain troubles, is one of interest, and yet statistics, so far as they can be applied to such a subject, rather show that intellectual activity and intellectual occupation protect one from disease of the brain. The gross forms of brain disease as well as degenerations are exceedingly common among the agricultural people, who largely use the muscles and to a great extent neglect the use of the brain. The circulation of any organ and its nutrition are improved by proper use, so that great mental activity is consistent with long life and good health, provided that the cells of the part and the small blood-vessels are not poisoned. The value of exercising muscles comes not so much from the fact that the blood is diverted from the brain, but is rather due to more perfect oxidation: we have a more perfect metabolism by which certain poisonous products are eliminated from the system, or are not formed. In this way we prevent auto-intoxication, which is the chief cause underlying cerebral hemorrhage, and to a large extent cerebral thrombosis. They are generally due to auto-intoxication.

DR. N. S. DAVIS, JR.—I should like to add a word or two to my previous remarks. Unquestionably the word apoplexy is commonly applied to cover both cerebral hemorrhage and thrombosis and embolism. It is unfortunate that it is so, but not strange, because of the difficulty of making a diagnosis between the hemorrhage and thrombosis or embolism. A diagnosis can often be made, and when it is possible a clear distinction should be made between the two affections. As to the applicability of the word apoplexy to both of these conditions, I doubt it, for pathologists teach us that the word apoplexy, implies a hemorrhage. We know of cerebral apoplexy, pulmonary apoplexy, and renal apoplexy. It means a hemorrhage only.

DR. HAROLD N. MOYER—I do not think Dr. Davis has correctly stated the genesis of the word apoplexy. It was used by Hippocrates, and its correct etymology signifies, literally, I strike down, or to strike down, and in that sense it was applied to a sudden fall and loss of consciousness from whatever cause. When anatomic studies in the early part of the last century were begun, it was found that many of those persons who had a stroke had an effusion of blood into the brain. The result was that the word, although etymologically incorrect, was associated with cerebral hemorrhage by expansion. The same term was used to designate hemorrhage into the liver, kidneys, or other internal organs. That, I think, is the true genesis of the word apoplexy. The earlier writers were perhaps more correct in the use of the term; certainly, they were etymologically.

I would call attention to the point made by Dr. Patrick in regard to alcoholics. He distinctly mentioned beer. Dr. Davis has in mind some of the stronger alcoholic preparations. The effect of beer and of the more concentrated alcoholics is very different. Beer contains a large proportion of vegetable nutriment, besides alcohol, and its effect on the pulse and circulation is different from the more concentrated alcoholics.

DR. S. A. MATTHEWS—In administering alcohol in concentrated form, the first effect is to cause a rise of blood pressure. This I have repeatedly demonstrated on animals, by taking kymographic tracings. But following this rise, the blood pressure begins to go down so the main effect of alcohol is to lower blood pressure. With regard to giving these patients beer, a patient taking a glass will get a certain percentage of alcohol, probably a dram, which will have a characteristic action. The large amount of water that is imbibed by the tissues after drinking beer causes a rise in blood pressure, and on that account it would be of benefit in thrombosis or in conditions where we want a rise in blood pressure. It is absolutely incorrect to say that there is no increased arterial tension from the administration of alcohol. There is; I have taken hundreds of kymographic tracings in cases where alcohol was given, and the initial dose always caused a rise in blood pressure, the after-effect being a lowering of blood pressure.

DR. EDWARD F. WELLS—I am a little surprised at the statements made by our neurologic friends, to-wit, that the vast majority of cases of apoplexy are of thrombotic, rather than of hemorrhagic origin; in other words, that such cases are very much more frequent than hemorrhagic apoplexies. Personally, I have seen comparatively few cases in which I have felt competent to make a diagnosis of apoplexy due to thrombosis. Occasionally I see a case in which it is difficult to differentiate cerebral hemorrhage from embolism, although, as a rule, I do not consider such diagnosis very difficult. Almost always, in embolic cases, we have evidences of mitral narrowing with roughness of the mitral valve. Under these circumstances we may reasonably infer that the symptoms of apoplexy are due to embolism. It may be granted that, in apoplexy, thrombosis is often the lesion, especially in those cases in young or middle-aged persons in which recovery ensues in a very large proportion of cases, unless death is sudden. But I believe that physicians engaged in general practice see a much larger number of cases of apoplexy, evidently due to rupture of blood-vessels within the brain: this not only from a clinical standpoint, but from a post-mortem point of view as well. I have had opportunities of seeing a larger number of post-mortem examinations in cases of death from apoplexy, and the lesion in such cases has been, almost always, a hemorrhage, and, as Dr. Patrick pointed out, there is not only a hemorrhage, but evidences of miliary aneurysms in the brain as well.

As to the treatment of apoplexy due to hemorrhage, it is certainly reasonable to consider the prophylaxis, and this should begin a great many years before hemorrhages occur. I have been impressed with the theory that lithemia is responsible for many of the vascular changes which lead, ultimately, to arteriosclerosis, enlarged left ventricle, increased arterial tension, interstitial nephritis, miliary aneurysms and cerebral hemorrhage. The means of prophylaxis, as is well known, are to be found in the diet and regimen of early middle life, as pointed out by Dr. Davis and Dr. Purdy.

I would like to ask Dr. Patrick, what measures, if any, can be taken to prevent the formation of a thrombus.

DR. HUGH T. PATRICK—I seem to have been misunderstood by some of the speakers. In the first place, I did not say that the *vast majority* of cases of apoplexy were due to thrombosis. The great discrepancy is not in the proportion of cases, but in the proportion of diagnoses. My observation is that a diagnosis of hemorrhage is made practically always, whereas, taking all cases together, the grave with the slight, with and without premonitory symptoms, thrombosis is the more frequent. The preponderance is not great. Taking the fatal cases alone, cerebral hemorrhage preponderates; there is no doubt about that. The majority of cases of a single sudden stroke, with death occurring within a few hours or days, are due to hemorrhage, while taking the slight with the grave cases, the majority are due to thrombosis. I have especially considered embolism because it stands by itself. A sudden hemiplegic attack with heart disease is considered to be the result of embolism; that is really about as nearly as we come in making a diagnosis of embolism. Dr. Purdy, I think, misunderstood my statement, when he says that there are premonitory signs of hemorrhage. There are premonitory signs, but they are such as are connected with the circulatory system, as determined by sphygmographic tracings and the condition of the heart. Those are hardly to be considered premonitory symptoms of hemorrhage itself. They are not referable to the cerebrum; they do not belong to the same class of symptoms; there is no premonitory slight weakness, dizziness, etc.

Dr. Moyer is right about the term apoplexy. The word, as originally used, meant a stroke. Then Galen amplified it and it was applied to those cases in which there was complete loss of consciousness and complete loss of power, except that respiration remained intact. Later the exception was made to include the circulation; there was a complete inhibition of faculties except the respiration and circulation. In the neighborhood of a hundred years ago it was discovered—I think by Rochoux—that nearly all of the fatal cases of apoplexy were due to cerebral hemorrhage, and although some time following this there were half a dozen men—especially Requin, and Rostan in his work on cerebral softening, 1819—who showed that this condition was due to other causes, still that discovery has remained to bias the medical mind to this day. I am glad Dr. Wells announced the subject as he did, because in my opinion a correct apprehension of the subject is very important, and the fact that the expression "apoplexy" has led to misapprehension and confusion in this Society, the highest medical court in this city, shows that it ought to be cleared up in some way. In the minds of practitioners at large, a sudden stroke means a cerebral hemorrhage. If the members will simply consult authorities, the men who have investigated this subject and are supposed to know what they are writing about, they will find my statement substantiated, possibly sometimes qualified. Gowers, I think, says, taking all cases together, there are probably more of thrombosis than of cerebral hemorrhage. If we take the slight with the severe cases, then thrombosis predominates. Thrombosis rarely kills the first time; but hemorrhage frequently does. The idea that a man must have two or three hemorrhages is a great delusion.

With reference to treatment, I wish to say a word about tetranitrate of erythrol, which apparently has a future in the treatment of these troubles, but its price at present is such as to almost prohibit its use. I have obtained excellent results with it, and have given it as long as the patients could afford to pay for it, but in some instances I have stopped giving it because they objected to the price. It is an extremely useful agent, because its action is so much slower and so much more prolonged than that of nitroglycerin.

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(Continued from Page 227.)

THE RATIONAL TREATMENT OF GLEET.

DR. J. M. BLAINE advocated the use of tonics and electricity. He uses a weak galvanic current, 1 to 1.5 milliamperes. The application should be repeated once a week. In strictures of moderate age and medium size he uses galvanism from the start. He finds that where galvanism is used it leaves the surface smooth and destroys all granular tissues, which are sure to be found back of the stricture.

TETANUS TREATED WITH ANTITETANUS SERUM.

DR. T. G. TAYLOR reported the following case: Mrs. J., mother of two children, gave a history of a long series of miscarriages, and stated that for several days she had been flowing excessively, and something had passed, but was destroyed without examination. She strenuously denied having in any way induced an abortion. The vagina was tamponed with an antiseptic solution, and next morning she complained of stiffness of the neck and jaws, not being able to separate her jaws more than a half inch. She complained of soreness in the thoracic muscles; temperature, 99.5; pulse, 95.

The uterus was curetted and irrigated with a solution of bichlorid, 1-4000, and 4 c.c. of P. D. & Co's. antitetanus serum injected under the skin of the abdomen. On the following day the stiffness of the neck and jaws was found nearly gone, but she was given an additional injection of 6 c.c. of the serum. The patient made an uninterrupted recovery.

OBSTETRIC LACERATION OF UTERUS, VAGINA AND PERINEUM—SIGNS, SYMPTOMS AND SEQUELS.

DR. JESSE HAWES, considering the gynecologic and obstetric aspect of the subject embraced in the above title, referred to the psychologic correlation existing between the sexual organs and conjugal love. The condition of the sex organs, he said, markedly modify the sexual instinct, and through the sexual instinct and appetite modify conjugal affections. Healthy normal sexual organs under the influence of a chaste normal mind are a portion of the human organism designed to express the manifestations of love. He would urge on physicians to recognize this relationship.

THE USE OF SALICIN IN ACUTE RHEUMATISM.

DR. J. W. CLINE gives large doses of salicin, with invariably good effects. He gives 30 grains every hour, till pain lessens, and then every two hours until all pain, fever and most of the swelling has disappeared, which occurs as a rule in from twenty-four to forty-eight hours.

PROBLEMS IN RURAL SANITATION.

DR. J. TRACY MELVIN has adopted the following contrivance whereby ashes can be used for the purpose of disinfecting and deodorizing the contents of the outhouses in rural districts: An ordinary-sized brick vault is built and cemented on the inside. The total depth should not be over four feet, half above ground and half below. A frame with drop door about sixteen inches by three feet is built into one side of the vault above the ground, to enable its contents to be removed. Upon this vault the ordinary outhouse structure is built. Attached to the rear, on a platform placed at the height of the top of the vault, is built a brick ash-chamber, four feet square, with a cover. An opening four inches by four feet is then made between the ash-chamber and the outhouse, opening about six inches below the seat-board. A board of the same size as the seat-board, with openings corresponding to those of the seat-board, these being closed on the under side by trap-doors fastened with strong spring hinges, is fitted into the space beneath the seat-board on a level with the floor. This brings it two inches below the opening from the ash-chamber. Ashes now poured into the ash-chamber can only pass down to this false bottom, and when this is covered two inches deep, or to the level of the opening, ashes will cease to flow, even if the ash-chamber is filled to the top. Any deposit now falls into this bed of ashes immediately over the trap. A sash cord fastened to the free edge of this trap, and passing backward over a pulley and up to a handle above the seat-board, enables one to quickly drop the ashes and deposit to the bottom of the vault, the spring hinges close the trap, ashes will automatically flow in, up to the former level, and all is ready for a repeated use. This false bottom should be covered with zinc and an ordinary fire-hook should be kept to assist in spreading the ashes, should they for any reason become clogged.

PREVENTION OF CERTAIN COMMUNICABLE DISEASES IN COLORADO.

DR. G. E. TYLER, secretary of the State Board of Health, gave the following reasons for the existence and spread of smallpox throughout the state during the last fourteen months: 1. The cases as a rule have been imported, principally from

New Mexico. It is also known that Colorado has suffered at the hands of the Philippine Islands, Texas, Kansas, Missouri, Nebraska, Utah and Massachusetts. 2. Neglect of vaccination. 3. Failure to recognize the disease in its early stages. 4. Failure to report every suspicious case to those legally responsible for its control. 5. Failure of health officer to rise to the situation. Such failures may probably be ascribed to one of the following causes: *a*. The influence of environments. County and town officials are often reluctant to spend the money necessary to quickly stamp out a threatened outbreak. *b*. Lack of executive ability. *c*. Lack of knowledge of his legal powers.

Unless all signs fail, Colorado is likely to have more serious outbreaks next winter than she has so far experienced. She need not have, however, if physicians, health authorities and the public do all in their power to prevent it.

Health boards all over the state should take the following measures:

1. Urge all citizens to be vaccinated and revaccinated. Parents should be urged to have infants vaccinated during the first year of life, and children should be revaccinated at 5 years of age.

2. School boards should be induced to secure the vaccination of all pupils.

3. Contractors should be induced to secure the vaccination of all employes.

4. Outbreaks should be anticipated by providing places to be used as quarantine and detention hospitals.

5. Failure to report cases of smallpox should result in vigorous prosecution of the offender.

6. Disinfection should be most thorough with reference to tuberculosis.

Dr. Tyler cited statistics proving that the number of cases of tuberculosis contracted in Colorado is on the increase. The means of prevention he summarized as follows: Every tubercular patient should be given an educational leaflet on the subject. In the larger cities and at resorts every case should be reported to the health authorities, and a register kept. All apartments recently occupied by tubercular patients should be disinfected by the health authorities. The spitting nuisance should be abated by posters, and in certain places by ordinances. All herds supplying milk should undergo examination. Tubercular and non-tubercular inmates of public and other institutions should be kept separated from each other.

VACCINATION.

DR. R. K. HUTCHINGS warns against the dressing of vaccination with vaselin, or any other ointment. The best results are obtained by keeping the sore perfectly dry from start to finish. He puts a small pledget of cotton over the sore after the lymph is dry, and over this an adhesive strap. Occasionally a lump forms at the site of the inoculation. This lump is spongy, about the size of a pea, red, and at times covered by a small scab. It generally remains a week or ten days, then dries up, leaving no scar. The patient is not immune. He has never been able to ascertain the lump formation and found no mention of it in any records consulted.

FOREIGN BODIES LODGED WITHIN EYEBALL.

DR. EDWARD JACKSON said in part: The patient's account of his injury is always defective, and often misleading. A foreign body having entered deeply does not cause the sensation of something in the eye, and the patient, impelled by hope, is often very positive that nothing is lodged there. Every detail of the accident should be minutely investigated: the body that inflicted the wound, whether rough or smooth; the relative position of the point from which it flew; the exact attitude of the patient; the direction in which he was looking. A thorough ophthalmoscopic examination at the earliest possible moment should be made. The position of the foreign body may be indicated by a streak of commencing opacity in the lens, or air bubbles, or shreds of hemorrhage marking its track. We must also consider whether it may not have passed entirely through the eyeball and lodged elsewhere. Where the exact location of the foreign body cannot be made out by examination under oblique illumination, or with the opthalmoscope, the X-ray should be used. Making two negatives, with the tube placed in different positions, with some known fixed point the shadow of which can be used as a point of reference for the shadow of the foreign body, it becomes possible to determine the location of the latter with great exactness. Unfortunately, very small foreign bodies do not give any perceptible shadow. He has had a case in which many trials with the X-ray failed to give an evidence of the presence of small particles of steel, although it was clearly visible in the fundus with the microscope.

In considering the prognosis and treatment it is best to divide the cases into three classes: 1, those lodged in the iris or anterior chamber; 2, in the lens, or 3, in the vitreous or fundus. Among twenty-five successive cases, the location of the foreign body was in the iris and anterior chamber in three, in the crystalline lens in four, and in the vitreous and fundus in sixteen. In one case it was partly in the iris and partly in the lens, and in one a foreign body, apparently simply lying on the iris, extended back through the zonule and into the vitreous.

When a foreign body is lodged in the iris or anterior chamber it should be removed as soon as possible.

Powder grains are occasionally lodged on the iris or in the lens. The finely powdered charcoal that remains of such a grain is not likely to ever cause any irritation. A foreign body lodged in the crystalline lens causes traumatic cataract. There is little liability to serious inflammation. It is proper, therefore, to allow the cataract to develop, and then to extract it in the ordinary way. He has seen a chip of steel hanging in the remains of the lens beginning to cause serious inflammation twenty-eight years after the original injury, the eye having, according to the patient's statement, remained quiet all that time.

A foreign body entering the vitreous, retina, choroid or ciliary body, if not promptly removed will set up such inflammatory and degenerative changes as to render the eye functionally useless. Smooth and aseptic particles are less likely to set up chronic degenerative changes and small particles firmly fixed in the fundus are compatible with useful vision.

He would insist that with the foreign body should be removed all badly damaged or probably infected tissue, the track of the foreign body through the vitreous and the bed of the tissue in which it lies. This can only be accomplished through a free scleral incision, made, if possible, through the point of entrance. Half the vitreous may be lost without serious consequence. We can save two or three times as many useful eyes by a surgical operation as by extraction of a foreign body with the magnet. To make a chip of steel jump from the wound with a giant magnet would seem a very brilliant operation to the bystanders, but it is a very useless one to the patient, if it leaves a track of inflammation with the eye. Surgery has no place for successful operations that work no permanent benefit for the patient.

VERTIGO.

DR. H. T. PERSHING gave the following classification of vertigo:

1. Vertigo of organic intracranial disease.

2. Degenerative disease of the central nervous system: *a*, lobes; *b*, disseminated sclerosis; *c*, paretic dementia.

3. Disease of cerebral vessels; *a*, arteriosclerosis; *b*, syphilis; *c*, endarteritis.

4. Organic disease of brain membranes or vessels absent; *a*, concussion; *b*, mechanical vertigo; *c*, toxic vertigo; *d*, labyrinthine vertigo: *e*, ocular vertigo; *f*, gastric; *g*, nasal vertigo: *h*, active or passive hyperemia and cerebral anemia; *i*, neurasthenia; *j*, essential vertigo.

5. Vertigo occurring as part of periodic nervous attacks; *a*, epileptic vertigo; *b*, migrainous vertigo, and *c*, hysteric vertigo.

EXTRADURAL SPINAL MENINGEAL HEMORRHAGE.

DR. S. D. HOPKINS reported a case under the above title. J. M., while shoveling coal, experienced a peculiar sensation throughout the body. It was not painful. His lower limbs became paralyzed twenty minutes after the beginning of the peculiar sensations. When seen on the third day of his illness he was suffering from pain in lower portion of trunk and thighs. The motor power of the left leg was good in every direction, but he was unable to make the slightest movement with his right. Sensation was present throughout the body. The right knee-jerk was absent, the left increased: ankle-clonus absent; deep reflexes of forearms normal; masseter reflex absent. Plantar reflexes: right slight, left absent. No ataxia,

no paralysis of arm; special senses normal; intelligence not impaired; girdle sensation and incontinence of urine and feces. The following day the patient was in the same general condition, excepting that nausea was added. During the evening he made a sudden movement, suffered severe pain in the back, and in a few minutes had a general convulsion in which he died. The diagnosis of spinal meningeal hemorrhage was confirmed at the autopsy.

CURED CASE OF HYSTERO-EPILEPSY.

DR. MINNIE C. T. LOVE reported the following case: S. M., aged 14, family history negative, from her 8th to 13th year, had suffered from chorea. The chorea suddenly disappeared some eighteen months ago, and she suffered instead from what her numerous physicians designated epilepsy. She had rosy cheeks, clear skin, and weighed 130 pounds. Menstruation was prolonged, excessive and painful. Dr. Love saw her during one of these attacks. She had a vacant stare, worked her fingers, and the facial muscles were much distorted. Her memory was getting very defective, so that she had to give up school. Electricity gave but slight benefit. Digital examination showed the uterus strongly flexed anteriorly and dislocated downward; pelvic viscera very sensitive. Curettage was performed and a stem pessary introduced. She menstruated afterward with ease, and felt better. Two months afterward she again had a nervous attack more severe than usual. Her eyes were found considerably astigmatic, and this was corrected. The nervous attacks have not recurred since. Her memory has improved, and she is practically well.

TRACTION PLASTERS IN LIEU OF THE MURPHY OPERATION.

DR. CHARLES DENISON exhibited traction plasters which he devised for the purpose of controlling thoracic movement on one side, thereby confining respiration to the unaffected lung. The plasters consist of two long strips of muslin, to the widest end of which adhesive plasters are attached, and a soft ring or collar. The plasters are applied to the chest, crossing each other in the axilla, and the front and back ends of the muslin strips are tightly drawn and firmly pinned to the collar placed on the opposite shoulder. This method, the author claims, is a perfectly, evenly and easily applied means to nearly annul the use of one lung, and, therefore, temporarily a suitable method to arrest pulmonary hemorrhage when from a known localized source; also to control ordinary or tubercular pleurisy, complicated or not with adhesions and pneumonia, or to limit and contract a pulmonary cavity, especially if located low down in the lung.

San Francisco County Medical Society.

July Meeting.

UNUSUAL CASES, ILLUSTRATING CO-OPERATION BETWEEN GENERAL PRACTITIONER AND OCULIST.

DR. F. B. EATON, in his paper on this topic, said that the relations between general practitioner and oculist should be more close and friendly than they are, in order that the patients of both may derive the most benefit from their medical attendant. In many conditions the general practitioner is indebted to the specialist for his diagnosis, or for light on a doubtful case, and in return the specialist should often turn over a patient who consults him, to the hands of the general practitioner, the patient's trouble being but some eye symptom of a condition of general disease which demands general rather than special attention. To illustrate his point, Dr. Eaton cited several conditions, and a few cases of the conditions referred to.

The first case mentioned by the doctor was one of traumatism followed by malingering, and an attempt to mulct the proprietors of a store in heavy damages. The patient, a woman, was one day in a book store when a number of heavy books fell on her head. She was not, apparently, much injured at the time, but later went to bed, claimed to be paralyzed in the left arm and leg and to have some disturbance of the left eye and vision. Dr. Eaton was asked by her and by her physician to make an examination, and did so, finding the woman to be myopic, the pupil of the left eye dilated and not responsive to light stimulation. The vision did not appear to be disturbed. Subsequently Dr. Eaton, who concluded that the eye symptoms were hysteric, was interviewed by three reputable physicians, retained by the defendants in the suit for damages which the woman had begun, who stated to him that they thought the whole matter but an attempt to get money from the defendants. Dr. Eaton was inclined to agree with them, at least in holding it to be a possible case, and decided to go with the patient's regular physician, entirely unannounced, for another examination. At the time of the second, unannounced examination, he found the patient entirely free from any eye symptoms whatever. The pupil was normal and reacted normally to light. Dr. Eaton was summoned as a witness, and largely on his testimony the suit for damages was lost. On the day following the loss of the suit the patient had entirely recovered from her paralysis and was seen walking about the streets. In Dr. Eaton's opinion homatropin had been used, perhaps with the connivance of the plaintiff's physician, to temporarily dilate the pupil of the left eye at all times when an examination was expected.

The second case referred to by Dr. Eaton was of a somewhat different nature. This patient, a man of about 40, had been thrown from a car, striking on his left side, hand and body. He was unconscious for about three-quarters of a hour, subsequently recovered, but ten days later developed peculiar eye symptoms. When examined, about ten days after the accident, the distance vision was normal, but there was total loss of accommodation and retinal anesthesia—or retinal fatigue—manifested on examining the field of vision for red and white. There was no organic trouble, but the diagnosis of traumatic hysteria seemed justified. The patient is really a sufferer and needs the care and attention of his general physician. He has been unable to do any work for the past five months, but will in all probability recover in time.

Locomotor ataxia is frequently first diagnosed by the oculist, and here again he should be in the most friendly relations with the general practitioner, for these cases are best dealt with by him alone. As an illustration, Dr. Eaton cites the following: A man called for his professional service, stating that about a year before he had noticed a slight dimness of vision and had gone to an optician, who had fitted him with glasses, which for a time helped him considerably. Again the sight failing, he called on Dr. Eaton. Tabes was at once diagnosed and the patient referred to the general practioner. By going to an optician in the first instance, rather than consulting a regular oculist, the man had lost a whole year, during which time he might have been benefited by the attention of a regular practitioner.

Dr. Eaton then called attention to the fact that some general practitioners object to sending their patients to an oculist, and have indeed been known to actually consult with opticians in regard to the visual defects of their patients. He read the resolutions endorsed by the AMERICAN MEDICAL ASSOCIATION at its Columbus meeting in regard to opticians.

Another condition was illustrated by the history of a case presented in the person of a woman of 23, who consulted him for failing vision. She had headache, on the left side of the head, and nausea; and when rising after having been seated for a while, things got dark to her. There was a family history of migraine. The face and mucous membranes were pallid and the optic nerves were found to be inflamed, with swollen vessels. The case was a rare one, but the diagnosis of chloroanemia was easily made and the patient turned over to a general practitioner for treatment. Liberal iron tonics soon relieved the condition to a marked degree, but the disc of the left eye remained whitish; the vision of the right eye had increased to twice its former quantity, while the vision of the left eye was about the same as when first seen. There were no cerebral symptoms and so no intracranial trouble was considered.

The importance of the early recognition of gonorrheal ophthalmia was then touched on, attention being called to the fact that here it is almost always the general practitioner who first sees the case, and who should make the diagnosis and see that the patient is at once properly treated. It sometimes occurs that the septic ophthalmia develops first as a slight catarrhal discharge, with but trifling inflammation, the extreme active process being delayed for some days. A case in point was as follows: A patient, who had had a slight discharge from the urethra for two days, was referred to Dr. Eaton, by his general practitioner, for a trifling catarrhal in-

flammation of the conjunctiva of one eye. The doctor was a bit suspicious and asked that the mucopus from the inflamed eye be examined microscopically. This being done, gonococci were found and silver at once instilled into the eye. The conjunctival inflammation disappeared rapidly, but the urethral trouble developed into a most obstinate case of gonorrhea.

DR. H. ISAAC JONES said that the question was a very broad one and could be looked at from many points of view. Ocular disturbances from general internal diseases are very common, and it behooves the oculist to be a good general practitioner, at least in so far as ability and training go. In his opinion the oculist had insufficient knowledge of general diseases; the adoption of a specialty should be at the latter end, rather than at the beginning of a man's professional life.

DR. JOHN WAGNER had much intercourse with specialists, and in his experience benefit was always to be derived from such family relations. A case of malingering, after a trifling accident from a car, was fresh in his mind, and in this case the examination and the testimony of the oculists defeated the dishonest attempt of the plaintiff to secure damages. In his opinion gonorrheal ophthalmia was not so common as generally supposed. In a somewhat extended career as a general practitioner seeing many cases of gonorrhea and doing a good deal of confinement work, he had met with but one case of the affection.

DR. V. H. HULEN said that the general practitioner and the oculist should always be on the best of terms, but he knew that this was not always the case, for some physicians were in the habit of consulting opticians rather than referring their patients to a regular oculist. It might be urged, he thought, by these physicians, that they did so for the reason that their patients could not pay the oculist's fee. In his opinion no oculist would refuse to refract or examine any case referred to him by a general practitioner, for nothing, if the physician stated the patient's position and his inability to pay.

DR. M. KROTOSZYNER thought that the oculist was indebted to the general practitioner to a large extent, not only for patients but often for diagnosis. He mentioned several cases in point, where the correct diagnosis of a case that had been treated by an oculist for some time was eventually made by the general practitioner. One patient of this sort had been treated by an oculist, stated Dr. Krostoszyner, for some time, but without benefit. On consulting him he suspected kidney affection, and found, on examination, casts in the urine and an albuminuric retinitis. This should have been diagnosed by the oculist at first. He urged the necessity for the general practitioner to study the use of the ophthalmoscope. In many cases it is absolutely essential that the fundus of the patient's eyes be examined, and unless he is able to make such an examination, the general practitioner is often left in ignorance of the true condition of his patient. He recalled a patient who had consulted him some time previously, giving a history of symptoms which he thought purely hysteric. After a prolonged course of treatment the patient did not improve. One night she died very suddenly, and on post-mortem examination a large glioma near the ophthalmic tract was found. Had an ophthalmoscopic examination been made early in the course of the treatment, the true diagnosis could undoubtedly have been made.

DR. PHILIP MILLS JONES called attention to the reverse of the picture painted by Dr. Krotoszyner, by recounting the history of a patient who had been referred to him by a general practitioner a short time ago. The patient, a young woman, was sent for examination, with the statement that her sight had been failing for a short time, and the condition was probably a serious one. Vision was found to be greatly reduced, but careful inquiry elicited the fact that the patient had but just recovered from an attack of diphtheria. Three or four weeks' good tonic treatment with a trip to the country entirely relieved the eye symptoms. In his opinion there could be no question that the general practitioner who was guilty of sending his patients to the optician for refraction was doing not only the oculist and the patient great wrong, but was also injuring himself, for sooner or later many of these patients find, when too late, that they have lost their sight through the ignorance of the true condition on the part of the optician. The man who is sent to an optician for refraction by his physician when he is suffering with dormant glaucoma, will not feel kindly disposed to that doctor when he finds himself blind and knows that it is largely owing to his physician's fault. So, too, with the patient who has progressive myopia, and is handed over to the tender mercies of the optician for a refraction which will mean ultimate blindness.

Alumni Association of Medical Department of University of California.

LEUCOCYTOSIS: ITS HISTOLOGY AND PATHOLOGY.

DR. H. A. RYFKOGEL discussed this subject and first reviewed the ground so successfully turned over during the past few years, and mentioned the advances in the study of the blood permitted by improved methods of staining. By means of these new stains the fact that five distinct forms, or better stages, of the white blood-corpuscle, or leucocyte, could be recognized. Of these five forms—the young, the older, the full-grown or adult cell, the eosinophile and the myelocyte, the third or adult cell, the common leucocyte, is the most common. It may vary somewhat in size and shape, and its nucleus may vary within considerable limits; it stains, however, with a neutral stain, and may be easily recognized and differentiated from the other forms of the white cell. The leucocyte does not have ameboid motion until it reaches the stage of development of the third variety or form, which form is found in pus and in round-celled infiltration, as well as physiologically after a meal. This question of the physiologic increase of the leucocytes after food digestion has been found an important one in investigating the truth of the statements of certain malingerers. If the statement be made that no food has been taken for some long period of time, and if the blood count shows an increase of the leucocytes with no pathologic condition or clinical symptoms that would account for the increase, it is good presumptive evidence of a misstatement on the part of the would-be-patient. Dr. Ryfkogel has found this of value.

The difference between leucocytosis and leucemia was touched on and he stated that in leucemia the myelocyte first appears, it not being found in normal blood; it persists and later the neutral leucocyte appears in increased numbers and also remains in larger number than normal. In true leucocytosis this form of the white cell does not appear, but the other forms are found, especially the third, or neutral form, which is found to occur in greatly increased numbers, the amount of the increase depending on conditions of disease infection and individual resistant power of the patient; the increase may be from 10,000 to 100,000. It is the increase of this third form of the white cell which is of diagnostic importance in many affections, and while the other forms of the cell may be also increased, especial value is placed on the count of the adult leucocyte which stains with the neutral stain. The relation between the virulence of the infection and the resistant strength of the patient is a peculiar one, and of much importance in the diagnosis as well as the prognosis. If the patient be particularly strong and resistant and the infection virulent, there will be an unusually marked increase in the number of white cells found in the blood. The indication is that of a particularly fierce struggle going on between the infection and the individual's resistant power. If, on the other hand, either the infection or the resistant strength be out of all proportion to the other factor in the problem, the increase in the number of white cells may not be very marked. Where the clinical symptoms show the infection to be severe and the blood count shows but a trifling increase in the leucocytes, the diagnosis is not so good as when the number of white cells is larger, for the count of the cells shows that resistant strength of the patient is not great, and that the disease may conquer more easily than if the strength of the patient more nearly equaled the strength of the infection. In this way the blood count may be used as a prognostic aid of no mean value. Leucocytosis is found to be present in all infectious diseases, save typhoid, unless in the presence of an abscess or peritonitis—tuberculosis and malaria. It may occur in these cases if there is also a complicating condition which would give rise to an increase in the white cells, as in the exceptions to typhoid fever, above cited. In a case of supposed appendicitis, for instance, if the blood count shows a largely increased number of white cells, it is safe to presume that pus formation has commenced.

The various theories suggested to account for the increase in the number of white cells in leucocytosis were next reviewed, the conclusion he seemed to accept being that recently advanced to the effect that in the system were acting two tendencies or forces, one a repellant tendency, by means of which the white cells are led to accumulate in the deeper viscera, the other being an attractive tendency which seems to draw the cells to the periphery and away from the deeper organs; there is also an actual increase other than the apparent increase due to the aggregation of the cells in the superficial circulation.

DR. TERRY asked whether any significance could be attached to the presence of eosinophile cells, except in the condition of trichinosis.

DR. RYFKOGEL, in reply, said that that was the only condition in which the eosinophile cells seemed to play any part.

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SATURDAY, JULY 29, 1899.

GENERAL PATHOLOGY AND THERAPY OF DISTURBANCES OF CIRCULATION IN ACUTE INFECTIOUS DISEASES.

At the height of infection the resulting disturbance of the circulation is clinically characterized by softness of the pulse and diminution of the blood pressure, not necessarily connected with feebleness of the heart's action. These changes are to be separated from those which develop in the further course, the defervescence of, and convalescence from, the febrile disease, when the heart may be dilated, abnormally rapid or slow, occasionally irregular.

No characteristic anatomical changes are necessarily connected with the first kind of disturbance. In many cases, especially in diphtheria and typhoid fever, there are, it is true, important parenchymatous changes in the heart's muscle fibers; in other infections, with acute clinical symptoms, such changes are entirely absent. It is quite generally accepted that an acute infectious myocarditis—Romberg—accompanies the symptoms of cardiac weakness characteristic of convalescence from many acute infectious diseases.

Experiments bearing on the nature of the mechanism of the circulatory disturbances at the height of infectious diseases have not as yet been such that the results could be applied to the conditions in the human patient.

In the "Festschrift fur Feier des 100 jahrigen Bestehens der Medicinischen Klinik zu Leipzig,"[1] this problem is considered quite extensively by Romberg and associates. In order to reach some insight into the action of infections on the circulatory system, they inoculated rabbits with pure cultures of the pneumococcus, the bacillus pyocyaneus, and the bacillus of diphtheria. The circulatory phenomena were studied carefully and at various stages the animals were sacrificed and carefully examined. These three micro-organisms were selected because of their pathogenic actions being quite similar in man and in rabbits; these bacteria also represent the principal forms or types of bacteria invasion.

Without entering into details, which would be quite impossible here, it was found that the pneumococcus, the pyocyaneus, and the diphtheria bacillus affect the circulation of the rabbit by paralyzing the vasomotor center in the medulla. The vasomotor paralysis leads to a fall of the arterial pressure and disturbances in the distribution of the blood in the body; the splanchnic vessels are overfilled, the vessels of the skin, muscle and brain underfilled. The heart need not necessarily be involved in the above disturbances; secondary degenerative changes may develop in consequence of insufficient blood-supply of its flesh; embolic pyocyaneus abscesses would enfeeble the heart's power, and the slowing and irregularity of the pulse observed in pyocyaneus and diphtheria infection are the result of the direct action of the infection of the heart's muscle. Romberg and his collaborators believe that these results are applicable to human pathology because of analogy.

The action of the human heart is not always enfeebled when the pulse is weak. At the height of acute infections the paleness of the skin, the drawn expression, the coldness of the extremities are often marked. Dyspnea, cyanosis, passive congestion and other symptoms of heart weakness, such as dilatation of the heart, are not necessarily present. Hence vasomotor paralysis accounts well for the most marked circulatory symptoms of the period of intense infection. Not heart weakness, but vasomotor weakness, not cardiac paralysis, but vasomotor paralysis, is the principal cause of the circulatory failure in acute infectious diseases. At the same time the importance of secondary and complicating changes in the heart's muscle remains unquestioned, especially in the later changes and in the period of convalescence.

Naturally the development of circulatory failure forms one of the prominent therapeutic indications in the acute febrile diseases. Assuming, as indicated above, that vasomotor paralysis plays an essential role in the productions of the enfeeblement of the circulation in the acute critical stages, how is the physician to best meet the threatening vascular paralysis?

Passler contributes an experimental investigation toward the solution of this important problem. The course of the disease in the infected rabbits—pneumococcus and bacillus pyocyaneus— was carefully watched until symptoms of fall of vascular tonus appeared, when different medicines were administered and their effect on the blood pressure noted. It was found that digitalis, by its support of the heart, for a time only exercises a favorable influence on the pressure. Subcutaneous injections of ether and intravenous injections of alcohol or cognac were without much, if any, ef-

[1] Deutsche Archiv. f. Klin. Med., 1899, vol. lxiv.

fect. The action of vasomotor stimulants was much more favorable than that of heart tonics. The best results as to vasomotor stimulation were obtained by the combined use of caffein and coriamyrtin; their influence was stronger, of longer duration and more constant than that of camphor. Strychnin and ergotin increased the pressure only in fatal doses. Infusion of salt solution appeared to be harmless and of some favorable influence. How far a similar human therapy will yield like results must be left to clinical observations.

In no case were any of the substances used in the experiments able to maintain intact the function of the vasomotor centers for any length of time. Clinical experience has shown that in human infections the dangers to be avoided may be transitory; if success crowns the effort to support the circulation during the critical period, it is possible that life may be maintained until the infection has passed its course.

While death during the height, or the acute period, of diphtheria infection may be attributable to vasomotor paralysis, the much-feared sudden post-diphtheritic death depends on other causes. According to the studies of the Leipsic clinic, as presented by Hallwachs, the last mentioned form of death depends on myocarditic changes. These changes usually develop after the acute period of the infection, but they may complicate the vasomotor paralysis. Similar events may occur in other infectious diseases. In diphtheria Hallwachs observed that the severity and the course of the clinical symptoms—changes in the cardiac rhythm, slowness and irregularity of the beat, feeble heart's action—corresponded closely with the degree and stage of development of the anatomic process—degeneration of the muscle fibers, round-cell infiltration, connective-tissue formation. The myocarditis begins as early as in the second week of the disease and may rapidly reach a dangerous extent; in favorable cases healing results, sometimes leaving no evidences of the changes, at other times scars and diffuse sclerotic areas. Here we have a striking example of the second possibility in which an infection may injure the circulatory system, namely by the production of an anatomic disease of the heart muscle, but it is to be emphasized that this occurs after the acuteness of the infection has subsided.

RECRUDESCENCE OF BARBARISM.

In the old barbaric days, while physical prowess was the chief quality that determined the survival of the fittest, it is in evidence that moral cowardice, as shown in treachery, assassination, and the torture of the defenseless, was the rule rather than the exception. At the present time the revelations of moral turpitude in France, coupled with the clear evidences of savage disposition, make it plain that but a brand is needed to light the fires of another Commune and to initiate a fierce civil and religious war. The Dreyfus case is but a humiliating picture of moral cowardice from the beginning to the present stage. In our own country, to the thoughtful, who must by no means be confused with the pessimistic, the signs of this form of degeneracy are all too evident. The signs are most obvious in our crowded cities where the environment departs farthest from nature and where, by close association of the criminal with the ignorant, lawlessness readily assumes the contagious form. These remarks are prompted by the terrible scenes enacted of late during the street-car strikes in various cities. The degenerate cowards, who operate under cover of darkness, have no compunction in endangering and even taking the lives of innocent men, women and children, so long as their insane desire for vengeance of real or supposed wrongs is satiated by attacks on the inanimate property of the companies. There have lately been scenes enacted on the streets of New York, Brooklyn, Cleveland and other cities that would have caused thrills of joy to run down the yellow spine of Robespierre. Cars have been stoned and blown up with high explosives, the pillars of elevated roads have been blown out, and many blameless human beings have been disabled by overwhelming assault of numbers, by direct injury from explosions, and by the terrible nervous shock resulting in those of delicate nervous organization from unwitting presence or participation in these tragedies. Because our country receives in its steady tide of immigration a constant proportion of the degenerate and unsuccessful from the lowest parts of the most unruly populations of Europe, a good part of this violence and crime may be laid at the doors of others than native-born Americans. Perhaps we should also not forget that this class, being accustomed from childhood to have the first sign of rioting on their part met with the stern hand of a well-trained military, misses the habitual repression in the proverbial laxity of American officials charged with the preservation of domestic peace.

But there are other evidences of native cowardice which can not thus be readily shifted on the backs of convenient Europeans. In what city paper can it not daily be read that some luckless individual has been run down by the reckless "scorching" bicycler, who in abject cowardice jumps on his wheel and flees ignominiously, leaving others to repair the damage he has done and "some person unknown" to bear the blame? So it is with that driver of horses who runs down the bicyclist or pedestrian. Usually the papers say that he whipped up his team and disappeared before he could be identified. Among our politicians courage is rapidly becoming the rarest of all virtues. Success is the all-important goal. If incidentally success may be attained by seeming to evince moral courage, there will be a show of it; but if the contrary holds, no thought is given to its absence. The thoughtful can supply endless and more apt illustrations of this unfortunate tendency to cowardice in our national life. Pessimism is, however, far from being the mainspring of these remarks. There is happily, even in the midst of this wave of turbulence and degeneracy, clear indication of the rise of a better spirit, or to speak more correctly there is hope that courage

is again becoming popular and reappearing brightly from under the cloud behind which it has been so darkly hidden. The popularity of the writings of Rudyard Kipling, that so often paint in bright colors courage and the other manly virtues, is a highly encouraging sign. Of still greater significance and of great hope for the future is the undoubted popular admiration for the two chief heroes of the late Spanish war, who beyond all doubt clearly exemplify to the public mind the combined virtues of physical prowess and moral courage. This popular worship of honesty and bravery can not do otherwise than give rise to healthier ideals of private and public virtue. The ignorant can only be reached through the emotions, with them reason per se is powerless. Admiration and reverence for real heroes have always marked the best that is in the Anglo-Saxon. Hero worship is not indeed an unalloyed good, but in the present condition of depraved social and personal ideals it may prove to be of immense utility in the development of our American life toward purer goals. In any event its simple existence shows the persistence among us of a great solid substratum of the keen common sense that has kept our race from so many of the pitfalls that have beset the path of the other European peoples. While it is not to be expected that the uncultured can ever admire the abstract virtues of courage and manliness, it is always possible for the personification of those qualities, which mean so much for social stability, to become a popular idol. Therein lies much of hope for our national evolution.

While the ever-present soldier of Europe is little to be desired among us, it is on the other hand true that we as a people are much too lax in dealing with violence. Even as corporal punishment is not infrequently necessary in the correction of the waywardness of childhood, so it is best that mob violence should always promptly meet the stern hand of the force of the law-loving classes. We must never forget that a large portion of any people are still, at best, but in a stage of advanced childhood, and can not be dealt with as can the fully developed man. True courage is the greatest of all virtues because its existence presupposes the possession of nearly all others. Let us insist that our teachers shall constantly instill in the developing minds of the children of our nation a reverence for manliness even were it, as it is not, at the expense of intellectuality.

PSYCHIATRY AND SENSATIONALISM.

"How Shall We Instil Correct Ideas of Insanity into the Public Mind?" is the title of a paper announced to be read before the coming meeting of the British Medical Association. This is a question that remains to be answered here as well as in Great Britain. There is no lack of desire for information, but the only kind that seems to be absorbed is the imperfect and erroneous, and the more erroneous and imperfect the more readily it is apparently absorbed. The problem of how to enlighten the public is therefore a difficult one, even more so than many other medical problems in regard to which the public takes an interest. A description of an asylum will be more readily believed if it is portrayed as conducted on the plan of an ill-managed poorhouse, than if facts are stated as they really are. The same is true as regards insanity itself. There is no statement too extravagant to be accepted by the laity, and even plain truths, plainly told, are too often accepted in a distorted form. There is such an opportunity for sensationalism that newspaper reporters in particular are rarely able to keep their imagination in restraint and the average literature they produce on the subject is about as thoroughly untrustworthy as it can well be. The physician who unguardedly allows himself to be interviewed on any remarkable incident or phase of the subject is liable to have to repent it, and this is well illustrated by a recent occurrence in New York. The Sunday edition of the *New York Herald,* June 11, contained a long article purporting to give the opinions of Dr. Van Gieson of the New York State Pathological Institute, and his conclusions that the day of asylums is nearly past and that they are to be replaced by pyschopathic hospitals which are to treat insanity in its beginnings and thus forestall the necessity of these accumulations of human misery. The article implied the claim for Dr. Van Gieson and his assistants that this great advance would be due to their labors, which were especially illustrated by a case recently under their care and the publication of which is to make a profound sensation in the medical world, and to revolutionize present systems of the treatment of insanity.

The case itself as described in the *Herald* is not a remarkable one to an alienist either in its symptoms or its outcome, though one well suited for a sensational write-up by an active reporter. While less elaborately studied and reported, more or less similar cases have often been successfully treated in ordinary hospitals for the insane. They are only exceptional enough to afford no basis whatever for such generalizations as are made in the article referred to. Insanity is not proved curable by one such case any more than it would be proved incurable by the occurrence of a case of paresis, were the latter actually as rare as it might seem to be from the statistics of fifty years ago. As for such remarks as those attributed to Dr. Van Gieson by the reporter: that "insane asylums will become almost obsolete;" that the more perfect and effectual methods used in the case of Rev. Mr. Hanna "will revolutionize the whole system" of psychiatry; that they "mark the pioneer departure from the old school and the establishment of a more logical and perfect system for the treatment of the insane," we would prefer to assume that he never uttered them any more than that he characterized workers like himself as "psychopaths," though that is inferable from a passage in the same quotation marks. It would seem eminently proper, nevertheless, for him to make some public repudiation of the statements here credited to him, but though we have been watching for

something of the kind, it has not yet come under our observation. It is sometimes a question whether silence is the best policy in such a matter, but it is generally safest for the party involved to give the benefit of the doubt to an open declaration of the unauthorized misstatement of his remarks.

Even if through want of caution there had been something said that might be thus misinterpreted, the better course would be to admit it and make the correction. As it is in this case, the uncorrected impression given the public thus far is that the workers in the New York Pathological Institute by this one cure have made the great discovery of the age in the treatment of insanity, and are willing to publish it in this sensational form in a lay journal. The use of alleged quotations from Dr. Van Gieson, implying all this, and necessarily with it a disparagement of his fellow workers in psychiatry, makes the appearance still more unfortunate and the more imperatively demands some explanation. And without such explanation the inference is justifiable that eminent ability as a pathologist is perfectly compatible with gross ignorance of clinical psychiatry and a condemnable ethical recklessness.

SCHENK'S THEORY IN PRACTICE.

A Chicago chemist has been trying Schenk's rules for the production of sex, with what he considers a successful result. He and his wife desired a male child, and the expected infant's sex turned out accordingly. Considering the fact that the chances of this being the case were about 104 to 100 in the natural order of events, this case seems hardly conclusive, but it appears to have excited enough local interest to call in the reporters and bring out one or two interviews with physicians, who are judiciously noncommittal. If important succession or even dynastic contingencies depended on this birth, it might have received less attention, and perhaps we may consider it an evidence, gratifying rather than otherwise, of the popular interest in a scientific theory.

RECIPROCITY IN MEDICAL LICENSURE.

State medical examinations should be so conducted that the license granted by the examining board of one state, to practice medicine within the boundaries of the state, should carry with it, under proper supervision and scrutiny, the license to practice medicine also in other states. A step in the fulfillment of this desired end has recently been taken in Delaware, where the medical council will hereafter, in compliance with an amendment to the state medical law passed by the last legislature, recognize the certificates of license to practice medicine issued by the New Jersey State Board. It is to be presumed that like legislation has been or will be enacted by the State of New Jersey. The organization and administration of state medical examining boards has accomplished much good, and the time has come for a national medical examining board in order that those who have qualified in one state and desire to remove to another, or to others successively, need not be compelled to submit to examination with each change of residence.

THE AMERICAN VOICE.

The American voice is a common subject of criticism, though the critics are to a great extent guilty of the fault of estimating the whole by a part, and that it may be only an insignificant fraction. Taking as its text a paper by Dr. John W. Farlow, read before the American Laryngological Association, the *British Medical Journal* indulges in some characteristic remarks on the "mangled and outraged" English tongue in this country, and the bad habit of speech "which will never be corrected because patriotic Americans look upon it as one of their national institutions." We should infer that the editor has had but little intercourse with the better class of Americans, or that he has been a very poor observer and a rash and superficial generalizer. Admitting all our faults and that we have, perhaps, as a nation, a higher-pitched and less agreeable speech than the best English practice, and that there is abundant room for improvement, we can honestly deny the greater mangling and outraging of the English tongue here than in its native seat, or that we patriotically look on any of our bad habits as a national institution. The editor of the *British Medical Journal,* in indulging in such assertions, is cultivating a bad habit of writing, which is worse in its way than one of speech. The peculiarities of the American voice are probably largely due to climate, but they are also to be found in certain parts of Great Britain. Before the War of 1812, when British men-of-war were impressing alleged English seamen off American merchantmen, it is traditionally reported that many a characteristic Yankee twang was claimed as proving its owner a Cornishman. There may be in it something hereditary after all, just as many of our alleged Americanisms are proved to be only archaic English of Shakespeare's or Cromwell's time.

WOMEN'S CLUBS AND PATENT MEDICINE.

That the disgraceful, immoral and disgusting advertisements of patent medicines and appliances for the alleged cure of diseases peculiar to women have been allowed to go on without protest on the part of the women themselves is astonishing. That the claims made by advertisers of this class of nostrums are false is probably not easily recognized by women, but their indecency certainly is plain enough. We are pleased to see that at least one of the women's clubs of the country has had the courage to take action in the matter, even if it goes no farther than to pass resolutions. We gladly give space to these and suggest to our readers that they call the attention of the "clubwomen" among their patients to the action of the women of Worcester, Mass., as contained in the resolutions passed by the Worcester League of Unitarian Women:

Resolved, That the Worcester League of Unitarian Women observes, with regret, the increasing offensiveness of advertisements of proprietary medicines claiming to cure the special diseases of the sexes. We consider them a hindrance to the work of social purity.

Resolved, That we appeal to respectable journals to combine in refusing all medical advertisements which contain indecent details of diseases.

Resolved, That we urge self-respecting women to condemn these printed indecencies, to avoid correspondence with firms which so offend, to withhold patronage

and to influence others against dealing with them, whatever the merits of the remedies they offer.

Resolved, That we request the press generally to publish these resolutions, and urge women's clubs throughout the land to take similar action, in the hope that by concerted effort we may secure redress of a great wrong, and overcome a mighty obstacle to moral progress.

CYSTICERCUS OF THE FOURTH VENTRICLE.

According to Hensen[1] cysticercus cysts in the fourth ventricle may cause the following anatomic changes: Extensive proliferation of the ependyma and marked internal hydrocephalus in consequence of closure of the sylvian aqueduct and the foramen of Magendie, as well as compression of the vena magna galeni; no changes are produced in the immediate vicinity, except those due to general compression. There are cases which run their course without any symptoms, but more frequently there develop evidences of increased intracranial pressure; headache, vomiting, dizziness, convulsions, enfeebled visions—all due to the internal hydrocephalus. Occasionally focal symptoms develop: on part of the medulla diabetes; referable to the cerebellum and crura cerebri, such as marked dizziness, cerebellar ataxia, indications of forced movements and positions. The kind of headache and the position of the head may point to the localization of the lesion in the posterior fossa. The features especially peculiar to cysticercus cyst of the fourth ventricle are the intermittent course and the rapid, eventually fatal exacerbation of the symptoms on account of its being free and spontaneously movable. In Hensen's own case the diagnosis lay between tumor of the cerebellum and hemorrhagic pachymeningitis. In all likelihood only a probable diagnosis of cysticercus in the fourth ventricle can ever be made during life because the general symptoms force those peculiar to the cysticercus into the background. Intermittent course and sudden death on account of paralysis of the centers of respiration may lead to correct diagnosis, although after death. It will be recalled that in the case of cysticercus cellulosæ of the brain and spinal cord, reported by Diamond[2], the epileptoid symptoms were referred to the irritation of the cysts.

RETENTION OF LIFE.

The possibility of the retention of life and consciousness for any time after complete severance of the body above the hips, has not been much raised in medical literature, and naturally observations of such an occurrence are rare. Not long since there appeared a sensational paragraph in the newspapers in regard to a young man surviving hours after having been cut in two by a train. As our confrère, Dr. Gibbon's name was mentioned in connection with the case, we wrote him in regard to it, and received the following report

CHARLOTTE, N. C., July 18, 1899.

To the Editor:—The patient, a young man of about 20 years, from the western section of North Carolina, attempted to board a passenger train in rapid motion. Losing his hold he fell across the rail, and the wheels of several trucks passed over his body, completely crushing the pelvis and lower portion of the abdomen, and the right arm above the elbow. The accident occurred at night, about twenty miles north of Charlotte, and the unfortunate man lived about thirty minutes after reaching this place, surviving his injuries about one hour. When seen by the writer, in a crowded passenger station, the man was perfectly sensible, answered all questions and complained bitterly of thirst. His face was expressive of the greatest anxiety and restlessness, and he was entirely pulseless. There was no hemorrhage, although the mangled muscles of the lumbar and gluteal regions hung from the side of his cot.

The situation being unfavorable for a minute examination of the extent of his injury, I am unfortunately unable to confirm what was afterward told me by the trainmen, that the lower extremities were completely severed at the pelvic brim, from the remainder of the trunk. The undertaker has also assured me that he placed first the upper portion of the body in the coffin and then the legs attached to the pelvis. My own examination of the man, while living, however, showed that the wheels of the car had passed directly over the lower part of the abdomen, of course crushing everything to pulp, though I did not suppose at the time that the section of the body was complete. I have no reason to doubt, however, that such was the case, and greatly regret that I did not insist on a removal of the body and a post-mortem inspection of the injury.

Very truly yours,
R. L. GIBBON, M.D.

Other instances have been reported where a few minutes were stated to have elapsed between complete severance of the trunk and death, but this interval is the longest we have seen as yet reported. A crushing injury such as is produced by being run over by car wheels may possibly so occlude the blood-vessels as to prevent too extensive hemorrhage at once, and if collapse and death do not at once occur, life may continue until the slightly later effects of the injury have appeared. Such cases, however, rarely survive long enough to come under medical observation. As Dr. Gibbon says in his letter, accompanying the above report, it makes really little difference whether the parts were completely severed or still held together by shreds of tissue, but the sensational character of the accident depends on the former being the case.

GENERALIZED VACCINIA OF ERUPTIVE TYPE.

There is yet wanting unanimity of opinion as to the exact relation between smallpox and cow-pox, and the question has not been decided whether the two are expressions of the same disease modified by the soil in which they are implanted, or are really distinct diseases. However this may be, it is certain beyond peradventure that inoculation of human beings with cow-pox affords protection from and does not give rise to smallpox, and while vaccination is occasionally attended with noteworthy constitutional symptoms, it is rarely accompanied by any other than the local exanthem. Cases have however, been placed on record in which vaccination was followed by a generalized eruption, and only recently Tyson reported such a case to the Philadelphia Pediatric Society. A most striking instance of the same sort has also been reported by D'Espine and Jeand[1]. The patient was a girl 11 months old, who was inoculated on both arms, with lymph that was also employed

[1] Deutsch Arch. f. Klin Med., 1899, 64, p. 635.
[2] Journal A. M. A., June 17, 1899.

[1] Archiv für Kinderheilkunde, B. xxvi, H. 5, 6, p. 367.

in the vaccination of two other children in whom the vaccinia pursued a normal course. In the child in question moderate fever set in four days after the operation, and in a day or two later, simultaneously with the pustules on the arms, several similar ones appeared on the trunk and face. After another day the eruption became much more profuse, while the temperature remained slightly elevated. Gradually the eruption extended over the entire body, although the constitutional manifestations remained mild. The exanthem everywhere presented the typical appearance of vaccinia, and subsided in the course of four or five days, although subsequently a few new vesicles made their appearance. The inoculated points on the arm pursued the ordinary course of vaccination. A calf was inoculated with some of the lymph from pustules on the leg and foot on the eighth and ninth days, with a positive result. With the contents of the pustules thus developed a second calf was inoculated, also with positive results. An attempt later to inoculate the first calf with active vaccinal lymph proved unsuccessful. The case was believed to be one of generalized vaccinia rather than one of mild varioloid, because the eruption failed to pursue the regular course of variola; and the general symptoms of this condition were completely wanting; while the possibility of direct or indirect transmission of smallpox could be entirely excluded. There was, further, no conveyance of variola to any one in the neighborhood of the child, although many of these had not been vaccinated since childhood. Finally, the positive results of inoculation of the calves rendered certain the conclusion that the condition was one of vaccinia. The occurrence of the condition is explained as a reversion to an original type, as a result of which a non-contagious exanthem is made to occupy a position intermediate between the localized eruption of cow-pox and the contagious generalized eruption of variola.

PHASES OF "CHRISTIAN SCIENCE."

Under the new medical act "Christian Scientist healers," etc., are, for the first time, given a legal status in Illinois. The act contains the following clause explicitly prohibiting interference with them: "This act shall not apply to any person who ministers to or treats the sick or suffering by mental or spiritual means without drugs or material remedy." Under this act the "Christian Scientist" has full right to practice without supervision or control by any authorities. Whatever may be said about this backward step in medical legislation, it must be admitted that unrestricted practice of "Christian Science" and faith healing is likely to have some queer developments. One phase, interesting from the veterinary standpoint, has lately occurred in Paterson, N. J. The "Scientist" failed to make a diagnosis in the case of a cow that was in extremis when he arrived. After "three sittings of profound meditation" the cow, however, so completely recovered that she chased the "Scientist" twice around the barnyard, and he was only rescued by a hired man with a pitch-fork. The *Chicago Chronicle*, which from time to time exhibits the usual newspaper iatrophobia against non-advertising physicians, is nevertheless rather skeptical about certain phases of this cure. The "Scientist," it remarks, undoubtedly maintains in common with other professors of his philosophy that matter is non-existent. Why then, it asks, did he rush around the barnyard to escape the cow, which, being matter, was non-existent? Why, moreover, did he treat a non-existent cow? The occurrence suggests that "Christian Scientists" are likely to demonstrate, as did the Paterson healer, that the line of the non-existence of matter has to be drawn at enraged animals, especially since these cannot be "faith cured out of existence. It is to be hoped that "Christian Science" will take to veterinary practice and thus extinguish itself. Unfortunately, however, those who have embraced this cult do not call in "Scientists" to treat their domestic animals, their face or their hair. Another phase of the same subject is illustrated in the way that some of the "Christian Scientist" judges who disgrace the bench deal with the question of mental shock in producing injuries. These, in their decisions, deny the legal right of mental shock to produce such diseases as chorea, while at the same time smuggling into legislative acts clauses favoring "Christian Science," similar to that of the Illinois medical practice act. It is not strange to find the sexual element cropping up in connection with these aberrant religious ideas, the relation between sensual practices and religious delusions among the insane having long been known to alienists. This relation explains the frequent sexual aberrations displayed by many fanatic sects. The prophets, John of Leyden, Knipperdoling and the Oneida community—the original "Christian Scientists"—exhibited these very strongly in their acts. This tendency has long been recognized as occurring among people of average normal condition by sincerely religious people. Mr. Spurgeon, in a sermon two decades ago, said: "Let us not forget, too, that excess of spirituality is by a strange but certain law, placed next door to sensuality." This phallic phase of religion naturally crops up in "Christian Science" literature. A recent issue of a Chicago medical journal contains a "Christian Science" article on marital hygiene, by one Ida E. Chaddock, which to the phraseology of the "Christian Scientists" joins directions which resemble those given to the priestesses of Aphrodite. It is to be expected that this literature will appear in greater quantities now that "Christian Science," so far as Illinois is concerned, is freed from any restriction.

Medical News.

THE NEW wing of the Tacie Harper Hospital, Long Branch, N. J., was dedicated July 19.

THE *Tri-State Medical Journal and Practitioner* is to be issued under the title of *Inter-State Medical Journal.*

THE Duke of Westminster has presented to the Royal Alexandra Hospital of Rhyl, Wales, the sum of $50,000.

PROFESSOR BRISSAUD has been appointed to the chair of history of medicine and surgery at the Paris Faculty of Medicine.

FIRE in the pathologic laboratory of the Kankakee, (Ill.) Hospital for the Insane, July 20, destroyed many valuable specimens.

DR. J. CARDEN COOPER of Philadelphia, left July 27 for Europe, where he will attend the International Con-

ference for Prophylaxis of Syphilis and Venereal Diseases, at Brussels, in September.

BY THE will of Miss Sue M. Bryson, a sufficient sum has been left the St. Joseph's Hospital of Lancaster, Pa., for the endowment of a free bed for children.

THE NEW French Minister, de Galiffet, mentioned so often in connection with the Dreyfus case, still wears a silver plate in his abdomen to cover a defect caused by a cannon ball at the siege of Puebla.

DR. F. T. STEWART, of the Pennsylvania Hospital, Philadelphia, is quoted as saying that he has recently treated five cases of tetanus by the administration of antitoxin, but in each instance the patient died.

THE WIDOW of a respected citizen of Riga, who died recently, has applied to the court for permission to resume her maiden name on the ground that the husband with whom she had lived for twenty years was a woman.

DR. JUDSON DALAND, Philadelphia, is in California. Before returning home it is his intention to visit the Yellowstone National Park, and he will read a paper before the Rocky Mountain Medical Society, in Salt Lake City, July 25.

THE SUGGESTION is offered, in a Paris exchange, that physicians in cities and small towns might obtain change of air and scene with the minimum of loss and expense, by merely exchanging their practices, offices, etc., for a short while.

LONDON cablegrams of July 22 announce that the bubonic plague has spread from Hongkong and Mauritius to Reunion. There were thirty-six cases at Mauritius during the week ending July 20, of which twenty-nine resulted fatally.

BY THE will of the late Robert L. Rea, Chicago, Northwestern University, Evanston, Ill., receives $10,000 for endowment of the "Rea Professorship of Anatomy." The College of Physicians and Surgeons, Chicago, receives $5,000.

THE PASTOR of St. James Methodist Episcopal Church, the Rev. Dr. Robert McIntyre, has announced that a hospital for incurable consumptives will be erected by a citizen of Chicago at an early date. The name of the donor has not been made public.

THE ALVARENGA PRIZE of the College of Physicians of Philadelphia, amounting to $180, for the year of 1899 has been awarded to Dr. Robert L. Randolph of Baltimore, for an essay entitled "The Regeneration of the Crystalline Lens: an Experimental Study."

DOYEN, the "champagne millionaire," "lightning operator" of Paris, received quite an ovation from the students at Kiel recently, when he exhibited his kinematographic reproductions of his operations at von Esmarch's clinic, at the request of Emperor William.

FIFTEEN druggists, confectioners and manufacturers of "fruit syrups" have been arraigned in New York City charged with selling impure syrups for soda water and ice cream. The analysis showed no fruit juice present and that the coloring was produced by aniline dyes.

A LEMBERG, Austria, paper recently reported that a portrait of the late Empress, in the possession of a certain citizen for many years, had commenced to drip blood from between the glass and the frame. A local scientist attributes it to the "reddish secretions of the bacillus prodigiosus."

ACCORDING to the *British Medical Journal*, the members of the Continental Anglo-American Medical Association will follow the precedent set last year in Edinburgh, and lunch together during the meeting of the British Medical Association next week. The chair will be occupied by Prof. Osler of Baltimore.

A FATAL case of hydrophobia in a child 3 years of age is reported from Columbia, Mo. The child was bitten June 12, and the first symptoms were noticed July 10, death occurring a few days later. Such cases are of interest as occurring at too early an age to possess the hysteric element claimed by some to be the basis of the disorder.

A CIRCULAR has been issued by the physicians of Finisterre, the French province most ravaged by alcoholism, emphasizing its pernicious consequences to public and private health and national interests, and announcing that they can no longer remain impassive spectators of the catastrophe. The effect of their crusade is already extending beyond their local influence.

DR. G. ALDER BLUMER, superintendent of the New York State Lunatic Asylum at Utica, has been elected superintendent of the Butler Hospital, Providence, R. I., and will assume his new duties early in September. Dr Blumer has made himself an enviable reputation during his nineteen years' service at Utica, and the trustees of the Butler Hospital are to be congratulated on their having secured his services.

HERMAN, the inventor of the postal card, is now urging the Austrian authorities to introduce the "telegram card," or "telegram letter," and the proposition is under consideration. The special card to be sold for the purpose is deposited in the mail as usual, but when received at the postoffice, the contents are to be immediately telegraphed or telephoned to the addressee. Such a card might prove a desirable means of communication between patients and doctors in many instances.

DR. LASSALLETTE of Pau was condemned last year to two months' imprisonment for "homicide par imprudence," as a pair of forceps was found in the abdomen of a woman who had died a few hours after he had operated on her for removal of a large fibroma. After completing his term he produced evidence that the patient's death was not due to the fact cited, but that she had been poisoned with nux vomica. The case is now in the hands of the experts according to the *Gaz. Med. de Paris* July 8.

THE average monthly death-rate in Santiago, Cuba, under the Spanish régime is said to have been 250, but under improved sanitary measures carried out since the occupation by American troops, the mortality has decreased to 112 per month and is constantly growing less, notwithstanding that a small epidemic of yellow fever has affected that district. Previous to July 19 no new case of yellow fever had been reported for a period of five days.

UNDER DATE of May 18, 1899, Manila Bay, P. I., Lieutenant and Asst.-Surgeon Eugene H. Hartnett, U. S. A., reported an outbreak of measles among the troops on the transport *Warren*, on her passage from San Francisco, Cal., to Manila, P. I. Five cases were developed before reaching the Hawaiian Islands. These were left at Honolulu. After leaving this port fifty-five cases were treated, although every effort was made to restrict the spread of the disease by isolation and disinfection. No fatality occurred from the disease.

IT IS a curious instance of the irony of fate that the electric exposition at Como, in honor of Volta's discovery of the electric pile, should have been destroyed by an insubordinate electric spark. The loss is com-

plete and includes the original models of all machines and instruments invented by Italians, as well as the priceless Volta relics, his machines, letters, etc., and specimens of all the latest and most improved appliances of electricity to medicine, surgery, and every art and industry.

ONE OF the last acts of the late Czarevitch, as we learn from the newspapers, was to publish a set of rules for consumptives. Himself a victim, he followed these rules most rigidly; the fear of imparting his disease became almost a mania with him, and none of his attendants were allowed to be on duty with him over two hours a day; the rest of the time they were obliged to spend looking after their health. He had collected, it is said, an extensive library on the subject of tuberculosis, which seems to have been the subject that most occupied his attention.

DR. L. L. SEAMAN, of New York City, has offered $100 in gold or a medal of equal value, as the successful competitor may select, for the best thesis on "The Ideal Ration for an Army in the Tropics." The competition is under the direction of the Military Service Institution of the United States., which has its headquarters on Gouverneur's Island, New York Harbor. Col. Weston, acting commissary general; Lieut.-Col. Charles Smart, deputy surgeon-general, and Lieut-Col. Wm. E. Dougherty, 7th U. S. Infantry, have been asked to act as a board of awards. The theses must be submitted by March 1, 1900.

ACCORDING to report the officials of the New Jersey experiment station have for a number of years had under observation several cows in which reaction had been given with tuberculin and were pronounced tuberculous. These animals found to be infected were isolated and have been closely watched, and from time to time examinations of the milk have been made but no tubercule bacilli have been found. The statement has also been made that, because no bacilli have so far been found, it does not absolutely prove that bacilli have never been present, and further that at this time the apparatus used is not as accurate as it is hoped to make it at some future day.

PHILADELPHIA is making an earnest effort to determine the extent to which adulteration of foods is being practiced in that city. Not only the retailer, but the wholesale dealer as well, will come in for his share in this investigation. The grand jury for July has five bills of indictment charging defendants with violation of the food laws, most of them being dealers in oleomargarin. Since January fifty-two persons have been indicted for selling oleomargarin for butter. During the same period twelve have been charged with selling adulterated milk. Five true bills have been found against retailers charging them with selling coffee adulterated with chicory.

THE ANTIVACCINATIONISTS will find food for thought if they will investigate the latest reports concerning smallpox in Germany during the last decade and a half. For the ten years previous to 1895 the average death-rate from smallpox was 116, the greater of the total number occurring in the early period of the decade. In 1895 there were 27 deaths, in 1896, 10, and in 1897, 5. In Germany the law requires vaccination and revaccination, and the law is carried out. In no other country is the value of vaccination more evident than in Germany, and in no other country is the preventive method more thoroughly carried out.

SINCE the large number of deaths from tetanus produced by injuries from the use of toy pistols, the coroner of Philadelphia has been looking up the law as it applies to the sale of firearms in general. Several additional deaths from tetanus have occurred in the city during the past week and that has probably given a greater impetus to the crusade against these firearms. An act of the Assembly, passed June 11, 1881, makes it a misdemeanor to sell firearms or any explosive substance to boys under the age of 16 years, and the offense is punishable by a fine not exceeding $300. Under this act a dealer in toy pistols has been arrested and after being censured severely, by the coroner, is now held to await the action of the district attorney.

THE ENTIRE sewage of Paris is used for irrigating and fertilizing the formerly partly barren tracts of land at Achères and Pierrelay, where the cabbages, etc., now grow in rank profusion. The last great intercepting sewer emptying into the Seine was formally closed with appropriate ceremonies, July 8, and the black flood diverted to the pumping works where it is raised to a height of 35 meters and then distributed, the water finally draining clear and odorless into the river. In the addresses delivered a glowing tribute was paid to several physicians, Bourneville, Cornil, Proust and others, who in the Senate Chamber and City Hall so materially forwarded the great work now brought to completion.

THE CRUPPI bill to regulate medical expert testimony, already mentioned in the JOURNAL, has been passed by the French lower house, but so enlarged in its scope that it now applies to all expert testimony in all criminal cases. It provides for a list of experts to be prepared each year, by the authorities, to include among others all the various faculties of medicine, pharmacy, and sciences, and physicians, surgeons and pharmacists connected with hospitals and asylums, classified according to specialties. From this list the judge appoints one or more experts and the accused an equal number, who are to study and confer together and in case of impossibility to agree, to select a third, or he can be selected by the court. The expenses are to be included in the court costs. The House passed a resolution independent of the bill urging that more attention be paid to legal medicine in the medical colleges.

SPONTANEOUS GANGRENE IN CHILDHOOD.—It is not always possible to ascertain the causes that lead to the changes in the vessels that are responsible for the development of spontaneous gangrene. In those of mature and advanced years vascular degeneration may be considered as a more or less physiologic process, constituting a part of the process of senescence. Pathologically it may occur also earlier in life. Under such circumstances we naturally look for an infective or toxic origin. The condition is obviously rare in early life, and when it does occur one is naturally inclined to attach greater importance to hereditary predisposition, alone or in conjunction with acute infectious disease, than to any other possible single cause. A unique case of spontaneous gangrene occurring in a child a year and a half old, has been placed on record by Goebel (*Deutsches Archiv. f. Klin. Med.*, 63 B., 1. und 2 H. p. 94). The par. ents were healthy; two children were well, and one had died of convulsions during dentition. The patient had been nourished artificially, had its first tooth at four months, walked at fifteen months, and had off and on suffered from catarrh of the respiratory passages, of which there had been an aggravation four weeks before coming under observation. Fever set in, with severe

cough, prostration and anorexia. After eight days the child dragged the left leg, although it presented no physical abnormity. There was no knowledge of traumatism. After another week the tonsils became enlarged, and a rash appeared over the whole body. The child was not severely ill, was free from vomiting, and had but slight fever. The eruption disappeared in the course of a few days, although the condition of the leg meanwhile underwent no change. The child, however, became peevish, restless, and sleepless, with mild delirium at night. It coughed a good deal, ate scarcely anything, asked only for water and lost perceptibly in flesh. Finally the extremity became marbled in appearance, strikingly cold, slightly swollen and within a short time entirely blue. Examination of the blood disclosed a slight increase in the number of leucocytes. The spleen was small, and the urine contained neither albumin nor sugar. A diagnosis of occlusion of the anterior tibial artery was made, and this was confirmed by the formation of a line of demarcation in the upper third of the leg. The parents refused to permit surgical intervention. In the course of a few days more signs of pneumonia made their appearance, together with albumin and tube-casts in the urine. The throat became red and edematous, and a mucoid deposit formed on the tonsils. Death finally took place amid septic symptoms. The autopsy disclosed necrotic destruction of both tonsils and catarrhal pneumonia, especially in the left upper lobe, with purulent bronchitis. The heart was dilated, its musculature firm, its cavities and valves free from thrombi and deposits. The spleen was enlarged, the liver pale, the kidneys cloudy. The aorta from the origin of the renal arteries was occluded by a thrombus, which on the left side extended to the division of the popliteal artery and projected into the anterior and posterior tibials. On the right the clot extended to the origin of the deep femoral artery. The veins were empty. The thrombus was brownish-red in color, without lamination, and nowhere presented appearances suggestive of an embolic origin. The only abnormality discovered from histologic examination was a local endarteritis at the bifurcation of the popliteal artery.

Therapeutics.

Chronic Catarrhal Gastritis.

℞.	Quinin sulph.	gr. xxx	1	95
	Strychnin sulph.	gr. ss		032
	Acid hydrochlor. dil.	℥iiss	9	75
	Tinct. cardamon. comp.	℥iiss	9	75
	Aqua, q. s. ad	℥iv	124	40

M. and filter. Sig. One teaspoonful in water after meals.

—*Wm. Pepper.*

℞.	Tinct. nucis vom.	℥ii	7	80
	Resorcin resublim.	℥ii	7	80
	Tinct. gentian.	℥v	19	50
	Syrup simplex, q. s. ad	℥v	155	50

M. Sig. Tablespoonful every two or three hours.

℞.	Tinct. nucis vom.	℥i	3	90
	Decoct. condurango.	℥iv	124	40

M. Sig. Tablespoonful half an hour before meals.

—*Ewald.*

To dissolve the mucus and destroy microbes of fermentation, lavage and

℞.	Hydrozone	℥i	3	90
	Aqua destil., q. s. ad	℥iv	124	40

M. Sig. Drink while stomach is empty once daily.

The hydrozone may at first produce acid sensations in the stomach, but as the irritated gastric surface improves in tone under its influence this will pass away and sensitiveness to its action will subside. When necessary the amount of hydrozone may be reduced until the stomach becomes more tolerant to it.

—*H. T. Webster.*

G. Hayem prescribes in the hyperpeptic form, with abundant secretion without dilatation, a course of Carlsbad water, unless there be heart disease or phthisis or the subject be feeble or aged. A formula for an artificial Carlsbad, for home use, is the following:

℞.	Sodii sulph.	gr. xl	2	60
	Sodii bicarb.	gr. xl	2	60
	Sodii chlorid.	gr. xvi	1	04
	Aqua destil.	℥xxxiii	1026	30

Sterilize or consume while fresh.

GASTRIC NEUROSIS.

℞.	Morphin hydrochlor.	gr. iii		20
	Cocain hydrochlor.	gr. v		32
	Tinct. belladonna	℥i	3	90
	Aqua amygd. amar.	℥v	19	50

M. Sig. Ten to fifteen drops (.5- .75 gm.) every hour. When pains are very severe, three doses of ten drops (.5 gm.) each within an hour.

℞.	Codein phosph.	gr. ¼		016
	Bismuthi subnit.	gr. v		32
	Sacchari lact.	gr. iii		20

M. Sig. A dose, every two hours.

—*Ewald.*

Treatment of Hepatic Insufficiency.

According to the *Medical Review of Reviews*, Gilbert and Weil have recently studied two cases of "lesser diabetes" in which there were present an enlarged liver, digestive glycosuria, urobilinuria and hepoazoturia, together with indicanuria, a picture suggestive of hepatic insufficiency. All these symptoms disappeared under the administration of hepatic extract. In another case a consumptive with enlarged liver had no other symptom than indicanuria which was persistent. Under the use of hepatic extract this symptom disappeared to return when the extract was discontinued.

Local Treatment of Pneumonia in Children.

The *Medical News*, May 20, refers to Chase's observations on the efficiency of external applications in the treatment of pneumonia in children. The forty-five patients studied lived in tenement-houses, in unfavorable surroundings. All but two were over a year old. Of thirty-nine who had lobar pneumonia, thirty-eight recovered. Six had bronchopneumonia, and of these four recovered. The effect of poultices was especially noted. These were made light, of flaxseed and cheese cloth, and covered with oiled silk or paraffined paper, and weighed not more than six ounces (186.6 gm.) They were placed on the affected part while the child was in bed, and removed in 30 or 40 minutes. Rarely were more than six or eight applied in twenty-four hours. Observation convinced him that poultices diminish pain, and have a soothing effect, often producing sleep; that they relieve dyspnea and reduce the number of rales; that they are rarely opposed by the children, and by adding to the comfort of the patient they maintain his strength and so facilitate his recovery.

Subacute or Chronic Bronchitis.

The following prescription is recommended by Crinon:

℞.	Terpini hydratis.	gr. lxxx	5	20
	Gylcerini.			
	Spiritus āā	℥iiss	77	70
	Mellis despumat.	℥ii	62	20
	Tinct. vanillæ	m. lxxv	4	67

M. Sig. Two to four tablespoonfuls a day.

Treatment of Angina Pectoris.

The best remedy during the attack is the inhalation of amyl nitrite. This should be administered in glass capsules, to be crushed in a handkerchief held to the nose. The beginning dose is four minims (.24 gm.) which must later be increased to eight minims (.48 gm.) If the attack is prolonged, trinitrin should be given per orem or subcutaneously, as in the following formula:

℞.	Spts. glonoini (1 per cent.)	gtt. xi		55
	Aqua laurocerasi	℥iii	11	70

One or more syringefuls may be injected, or three drops (.15 gm.) of trinitrin in water, increased to six drops (.3 gm.). Between the attacks regulate the diet and forbid alcoholic drinks. White meats, eggs, vegetables, and as drink, milk, mineral water, and tea should form the chief diet. For medication digitalis, caffein, and especially the iodin preparations are important. Potassium iodid should be administered for one month, followed by sodium iodid given for two months, as in the following formula:

R.	Potass. iodid	3iiss-3v	9 | 75-19.50
	Ext. thebaicæ	gr. iii	| 20
	Aqua destil	ʒx 311	|

M. Sig. Tablespoonful three times a day. Continue course for two to four years.

R.	Sodii iodid	3iss-3iiss	5 | 85-9.75
	Sodii arsenit	gr. i	| 065
	Aqua destil	ʒxxxvss	138 | 45

M. Sig. A tablespoonful three times a day.

—Huguenin.

Dysmenorrhea.

R.	Antipyrin	3iiss	9 | 75
	Ammonii bromid.		
	Potassii bromid, āā	3i¼	4 | 87
	Ext. viburni prunifol	3v	19 | 50
	Spts. vini gallici.		
	Syrup aurantii, āā	3x	39 |
	Aqua destil	ʒxxss	79 | 95

M. Sig. A teaspoonful four or five times daily.

—Cushing and Cumston.

DYSMENORRHEA AND OVARIAN NEURALGIA.

R.	Ext. belladonna.		|
	Ext. stramonii, āā	gr. 1/5	| 012
	Ext. hyoscyami	gr. ¼	| 016
	Quin. sulph	gr. ss	| 03

M. Ft. pil No. ii. Sig. One repeated in two or three hours if necessary.

—Steer.

R.	Tinct. cannabis ind	m. x	| 60
	Syrup chloral hydrate (P.B.)	m. xx	1 | 20
	Glycerin	ʒi	3 | 90
	Aqua camph., q. s. ad	ʒi	31 | 10

M. Sig. One dose to be taken at the commencement of pain. A second dose may be given in three hours, but no more until the next day.

—Bedford Fenwick.

For nervousness and general malaise, especially at the period of the menopause.

R.	Ammonii bromid	ʒii	7 | 80
	Sodii bromid	ʒiv	15 | 60
	Spts. ammon. aromat	ʒvi	23 | 40
	Aqua camph	ʒvi	186 | 60

M. Sig. Tablespoonful every four hours.

—Parvin.

Vaginismus.

R.	Zinci valerianati	gr. 5/6	| 05
	Quinin valerianat	gr. iss	| 095
	Ext. opii.		
	Ext. belladonna, āā	gr. 1/6	| 01

M. Ft. pil No. i. Sig. From three to six pills daily.

Locally:

	Ext. krameria	gr. iss	| 095
	Morphin hydrochlor	gr. ⅛	| 008
	Ol. theobrom	ʒi	3 | 90

Ft. suppos. vaginal.

—Tourenaint.

Sexual Atony in Women.

R.	Ext. cannabis ind.		|
	Ext. nucis vom., āā	gr. xxx	1 | 95
	Ext. aloes aq	gr. vii	| 46

M. Div. in pil No. c. Sig. One three times a day.

Taste of Potassium Iodid Disguised.

Dr. F. E. Ferrea of San Francisco, Cal., writes: "It gives me pleasure to forward you a formula for the administration of potassium iodid. I have given such a mixture to many of my medical friends who are more than pleased with it. One teaspoonful readily disguises the taste of ten grains of the iodid:

MIXTURE YERBINUS COMPOUND.

R.	Saccharin	ʒiii	11 | 70
	Fl. ext. orange peel	ʒii	7 | 80
	Fl. ext. yerba santa	ʒii	7 | 80
	Fl. ext. ginger	ʒiv	124 | 40
	Aqua, ad	Oiv	1920 |

Mix. Add ʒi (31.1 gm.) $MgCO_3$; shake; let it stand for twenty-four hours; filter. Color red with ʒi (31.1 gm.) fl. ext. cudbear, if desired.

Book Notices.

Electro-Haemostasis in Operative Surgery. By ALEXANDER J. J. SKENE, M.D., LL.D., professor of gynecology in the Long Island College Hospital, etc. New York: D. Appleton, 1899.

This work is a monographic statement of the construction and uses of the author's electric hemostatic forceps, which appears to be a very valuable addition to the surgeon's armamentarium. It is profusely illustrated, the descriptions are clear and readable, and the author's success with his method appears to have been very satisfactory in quite a wide range of operations. The cuts, though evidently made from elaborate drawings, are largely schematic, and, therefore, the more intelligible and illustrative of the text. The concluding chapters are devoted to the description of the author's approved methods of surgical antisepsis and asepsis, including hospital construction and disinfection methods.

Albuminuria and Bright's Disease. By NESTOR TIRARD, M.D., F.R.C.P., physician to King's College Hospital, etc. With original illustrations. London: Smith, Elder & Co., 1899.

This latest addition to the text-books on kidney disease and albuminuria seems to have the merit of being a clear, practical monograph of the subject, especially in its purely medical aspects, as, while it includes also the kidney affections that sometimes call for surgical measures, these are left for the student to refer to in especially surgical works. It is also brief in its mention of the usual urine tests, and, as a text-book, perhaps more might have been said as to these. In other respects it seems a valuable work both for the student and the practitioner, and one that can be heartily recommended.

BOOKS AND PAMPHLETS RECEIVED.

Acknowledgement of all books received will be made in this column, and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review as dictated by their merits, or in the interests of our readers.

Manual of Bacteriology. By Robert Muir, M.A., M.D., F.R.C.P.Ed., and James Ritchie, M.A., M.D., B.Sc. Second edition. Illustrated. 8vo. Cloth. Pp. 564. Price, $3.25. Edinburg and London: Young J. Pentland. New York: The Macmillan Co. 1899.

A System of Medicine by Many Writers. Edited by Thomas Clifford Allbutt, M.A., M.D., LL.D., F.R.C.P., F.R.S., F.S.A. Vol vi. Octavo. Cloth Pp. 944. Price, $5.00. New York: The Macmillan Co. 1899.

Mechanics of Surgery, Comprising Detailed Descriptions, Illustrations and Lists of the Instruments, Appliances and Furniture Necessary in Modern Surgical Art. By Charles Truax. Large Octavo. Cloth. Pp. 1024. Chicago: 1899.

Pulmonary Tuberculosis. Its Modern Prophylaxis and the Treatment in Special Institutions and at Home. Alvarenga Prize Essay of the College of Physicians of Philadelphia for the year 1898, revised and enlarged. By S. A. Knopf, M.D. (Paris and Bellevue, N. Y.), physician to the Lung Department of the New York Throat and Nose Hospital; former assistant physician to Professor Dettweiler, Falkenstein Sanatorium, Germany; vice-president of the Pennsylvania Society for the Prevention of Tuberculosis; Fellow of the American Academy of Medicine; laureate of the Academy of Medicine of Paris, etc. With descriptions and illustrations of the most

important Sanatoria of Europe, the United States, and Canada. Octavo. Price, $3.00 net. Philadelphia: P. Blakiston's Son & Co.

Principal Poisonous Plants of the United States. 8vo. Cloth. Pp. 60. Published by the Illinois State Board of Health. 1899.

Transactions of Southern Surgical and Gynecological Association. Vol. xi. Eleventh Session, held at Memphis, Tenn. Octavo. Cloth. Pp. 516. Published by the Association. 1899.

Pyorrhea Alveolaris and Its Relations to General Medicine. By John Fitzgerald, L.D.S. Small Octavo. Cloth. Pp. 62. London: The Medical Publishing Co., Ltd.

Mineral Waters of United States and their Therapeutic Uses. With an account of the various Mineral Spring localities, Means of Access, etc. By James K. Crook, A.M., M.D., adjunct professor of clinical medicine and physical diagnosis at the New York Post-Graduate Medical School, etc. In one octavo volume of 580 pages. Cloth, $3.50, net. Philadelphia and New York: Lea Brothers & Co. 1899.

Deaths and Obituaries.

W. N. Alsop, M.D., Shaw, Miss., formerly of Louisville, Ky., was called to see a patient at Cleveland, Miss., July 12, and there murdered....S. H. Boyd, M.D., Tolu, Ky., was thrown from a cart and instantly killed July 1....Joshua A. Brown, M.D., McConnellsville, Ohio, died July 7, aged 85 years.... Clarence Chapman, M.D., Medina, N. Y., died July 8, aged 84 years....Byron S. Coleman, M.D., Rochester, N. Y., July 15, aged 38 years....A. J. Davis, M.D., Pittsburg, Pa., July 19, aged 73 years....S. N. Guice, M.D., Meridian, Miss., July 7, aged 60 years—John M. O'Byrne, M.D., Ocean View, Cal., July 10, aged 39 years....David Rosenthal, M.D., Chicago, July 18, aged 70 years....Charles J. Siglinger, M.D., Philadelphia, July 12....John T. Stafford, M.D., San Francisco, Cal., July 3, aged 30 years....William R. Wood, M.D., Scotland Neck, N. C., formerly superintendent of the insane asylum at Raleigh, July 12, aged 75 years....Burrows Burdick, M.D., Stoughton, Wis., June 30, aged 76 years.

HENRY TUBBS, M.D., Kirkwood, Ill., ex-state senator, president of the First National Bank of Kirkwood, First National Bank of Alexis and National Bank of Monmouth, died July 16, after a brief illness.

PAUL JONES, M.D., who for several years has been connected with the department of biology in Vanderbilt University, Nashville, Tenn., was drowned at Wood's Holl, Mass., where he was doing special work in biology, July 1. He was 31 years of age.

C. W. CRAM, M.D., Davenport, Iowa, died July 13, aged 65 years. In 1857 he entered Starling Medical College, and later served as house surgeon of the hospital at the Ohio State Penitentiary for several years, afterward becoming superintendent of the hospital.

GEORGE W. BABCOCK, M.D., Chelsea, Mass., died July 14, aged 84 years. He was one of the founders of the Massachusetts Society of Medical Examiners.

KATHARYN N. NORTHRUP, M.D., Women's Medical College, Philadelphia, 1893, formerly of the Warren (Pa.) Asylum, and for the past three years resident physician of the South Mountain State Insane Asylum, died in Reading, Pa., July 15.

RUSSELL STURGIS, M.D., Harvard, 1881, of Boston; died there July 18. He was a son of Major Russell A. Sturgis and a grandson of the Russell Sturgis of Baring Brothers, London.

JAMES S. GEARY, M.D., Bellevue, 1892, coroner's physician Borough of the Bronx, New York city, died in Moot Haven, N. Y., July 18, aged 30 years.

CYRUS N. LAWRENCE, M.D., Vermont Medical College, Woodstock, Vt. (now extinct), 1850, died suddenly July 18, at a sanitarium in Jamaica Plains, Mass. He was mustered in as surgeon of the Tenth Massachusetts, in June, 1861, and was in charge of the hospital establishment at Gettysburg after the battle. Afterward he was transferred to the South Street Hospital, Philadelphia, in 1863, and in 1864 became medical inspector of the First Army Corps.

CHARLES HOWARD HILL, M.D., Philadelphia, died July 18, aged 85 years. Dr. Hill was a graduate of the Jefferson Medical College, and was in active practice for a period of nearly sixty years. In early life he took considerable interest in politics and was at one time a member of the state legislature.

OTIS B. BENBROOK, M.D., formerly of Natchez, Miss, died July 14, aged 29 years. The Doctor received his degree in medicine from Tulane University, New Orleans, in 1893, returning to Natchez, where he was connected with the hospital for some years. In 1897 he removed to St. Joseph, La.

Miscellany.

Systolic Mitral Murmurs: Correction—In Dr. Horace D. Arnold's article on this subject in the JOURNAL of July 15, on page 143, line 13, column 1, read: "We can not find a dividing line between the so-called anemic murmurs and the mitral murmurs."

Hernia of the Diaphragm.—There are 433 cases of hernia of the diaphragm on record, but seldom of such extent as the case of a new-born male infant who showed no external indications of the condition. The left pleural cavity contained, in a hernial sac, almost the entire contents of the abdomen, with the heart and large thymus pushed entirely over to the right.—*Wien. Klin. Woch.*, 24.

Traumatic Aural Affections.—Radzich reports several instructive cases which emphasize the importance of examining the ears in case of traumatic injury to the body. Symptoms of a traumatic lesion of the inner ear are chronic hyperemia of the deeper segment of the meatus externus and of the tympanum. The temperature-curve is also an indication in catarrhal otitis with a subacute course.—*St. Petersburg Med. Woch.*, July 1.

Philadelphia Mortality Statistics.—The number of deaths for the week just closed was 510, an increase of 28 over last week and a decrease of 13 over the corresponding week of last year; 211 occurred in children under the age of 5 years. The following were the principal causes of death: apoplexy, 11; nephritis, 26; cancer, 17; cholera infantum, 73; tuberculosis, 69; diabetes, 2; heart disease, 24; pneumonia, 17; appendicitis, 4; suicide, 1; sunstroke, 3; tetanus, 7.

Chronic Ankylosis of Spine.—N. Schatalow describes three cases of this rare affection. He notes that the pains disappear when reclining and are more intense when the patient moves about. He considers these pains due to the compression of the nerve roots as well as the affections of the bones. This compression explains the other nerve symptoms noticed. The affection begins gradually and may be due, he suggests, to a congenitally defective development of some segments of the connective tissue and skeleton, with premature sclerosis.—*St. Petersburg Med. Woch.*, July 1.

Specific Toxic Properties of Tuberculin Acid.—Ruppel isolated from the tubercle bacillus a specific nuclein acid, and Behring announces that this acid alone is fully as effective, to say the least, as any other preparation yet produced for the treatment of tuberculosis. It also retains its specific properties much longer. With the help of this tuberculin acid the degree of toxicity of any tuberculin product can be regulated as desired. His communication in the *Berlin Klin. Woch.*, No. 25, describes his methods of testing, on animals, the specific

toxicity of preparations of tuberculin, for which he considers cattle better adapted than goats.

Parishes Must Pay for Keeley Cure.—The supreme court of Louisiana holds that article 202 of the constitution of 1879, while properly construed to mean that the taxing power was to be exercised by the general assembly for state purposes, by parishes for parish purposes, and by municipal corporations for the purpose of such corporations, is also to be construed with article 163 of the same constitution, which provides that "the general assembly shall make it obligatory upon each parish to support all infirm, sick and disabled paupers residing within its limits," etc., and, when so construed, did not affect the power of the general assembly, by the adoption of Act No. 157 of the Acts of 1894, to require the parishes to pay the expense of treatment at the Keeley-Cure Institute of persons contemplated by said act, and as therein provided. Moreover, it holds that the plaintiff, in Webster vs. Police Jury of Parish of Rapides, had the right, being a poor man, etc., to place his brother in the institute for treatment, and to look to the parish to pay the bill; and if, as between himself and the institute, and in order that the purpose of the law might not be defeated, he borrowed the money and paid the fee required by the institute in advance, he still had the right to look to the parish to pay the bill.

Hydrophobia and the Pasteur Treatment.—The Chicago Pasteur Institute gives a summary of the results of the preventive inoculations against hydrophobia attained since its inauguration, July 2, 1890. During this time 780 patients received the antihydrophobic treatment. Of these 709 were bitten by dogs, 29 by cats, 26 by horses, 7 by skunks, 5 by wolves, 2 by cows, 1 by a calf, 1 by a rat, 1 by a mule, 1 by a pig, and 3 by hydrophobic human beings; 377 persons received severe and multiple lacerated bites on the hands and wrists, 92 on the head and face, 110 on the arms, 173 on the legs and thighs, and 28 on the trunk. Following the role of Pasteur, the patients treated have been classified as follows: 1. Persons bitten by animals recognized and ascertained to be rabid by the test experiment made in the laboratory or by the death of other persons or animals bitten by the same animal; of this class 258 were treated. 2. Persons bitten by animals recognized to be rabid by the symptoms of the disease shown during life; of this class 358 were treated. 3. Persons bitten by animals strongly suspected to be rabid; of this class 161 were treated. Only three deaths have been reported, thus giving a mortality of 0.38 per cent. Before the discovery of the Pasteur treatment the mortality was as high as 88 per cent. for the bites of the face, 67 for bites of the hands, and 20 to 30 per cent. for those of the limbs and trunk. All patients tolerated the treatment perfectly well. The treatment consists in hypodermic injections of a specially prepared virus of different gradation of strengths for a period of fifteen, eighteen or twenty-one days, according to the severity of the case. The method used is identical with that used in Paris.

Army Medical News from Manila, P. I.—Reports from Chief Surgeon Henry F. Hoyt, Second Division, Eighth Army Corps, detailing the movements and engagements of his division during the month of May, 1899, have been received at the surgeon general's office. An engagement with the insurgents took place May 3, at the Santo Tomas railway station. The troops suffered greatly from heat and thirst, as their canteens became empty early in the day and the water found in the locality was brackish. The wounded were sent to the rear, on hand-cars. Filipino prisoners were made to propel the cars as our own men were so prostrated by the heat. After being cared for at the dressing stations the wounded were immediately sent to Manila by train. On the 24th another engagement took place west of San Fernando. The wounded, including some Filipinos, were treated at the field-hospital and sent to Manila on the same day. The casualties for the month were 6 killed and 52 wounded. On May 25 a division field-hospital was established in San Fernando in five adjoining buildings, Major Guy L. Edie, brigade surgeon volunteers, in charge. The capacity of this hospital is 200 beds. Diarrheal troubles were so greatly on the increase during the month that recommendation was made to regulate and restrict the sale of fruit. Major Hoyt's recommendations for change in the ration to meet the conditions of service in the tropics are that the rice of the field ration should be increased to six ounces. Company commanders should encourage its use and see that the cooks prepare and serve it in palatable form. The canned corned beef of the travel ration has been generally disliked by the troops of this division. In place of it boiled sliced ham or a sausage, three parts beef and one part pork, is recommended. In place of beans a nutritious vegetable soup is proposed. These articles and the tomatoes of the ration should be put up in flat cans, as being more convenient to carry than those of the present shape.

Influence of Borax on Nutrition.—In a recent number of the *Am. Jour. of Physiology*, R. H. Chittenden and William J. Gies of the Sheffield Laboratory of Physiology, Yale University publish the results of their experiments in a study of the influence of borax and boric acid on nutrition, with special reference to proteid metabolism. In view of the wide-spread use in commercial food preparation, of boric acid and borax as a preservative, as well as the general interest recent inquiry into food adulterations has awakened, their conclusions are of special interest. The experiments were conducted on full-grown dogs, whose nitrogenous equilibrum was well determined before the experiments were begun: the animals were suitably caged that all excreta, both liquid and solid, could be collected. During the experimentation the animals were fed on a properly-balanced mixed diet composed of lean beef, cracker-meal, lard and water. Great care and accuracy was resorted to in the preparation and administration of this food, which was served twice daily, the boric acid or borax being usually given with or immediately following the meal, enclosed in a gelatin capsule. Three distinct series of experiments were perfected and carried on. In the first borax was administered, in the second boric acid, while in the third both drugs were used. The conclusions were that the administration of moderate doses of borax, that is, up to five grains per day, even if continued over a long period, does not influence proteid metabolism, nor exert any special influence on general nutritional changes in the economy; under no circumstances does borax tend to increase body weight, or to protect the proteid matter of the tissues. Large doses of borax (5-10 grams daily) directly stimulate proteid metabolism, and, if continued, lead to increased excretion of nitrogen through the urine, also of sulphuric and phosphoric acid. Boric acid, on the other hand, in doses up to 3 grams per day, is without any practical influence on proteid metabolism and on the general nutrition of the body. Borax, in large doses, somewhat retards the assimilation of proteid and fatty foods, the feces are increased in weight, and in both nitrogen and fat. Large doses produce some increase in mucus and diarrhea. Boric acid, contrariwise, in large doses is without such influence.

Right to Appoint Substitute.—A contract in writing for the employment of a county physician provided that he should perform all the duties of health officer for the county, and should also "take care of and give all poor person or persons who may be a proper charge upon the county, giving the same proper medical attention and care, furnishing all medicines, surgical dressings, and appliances," etc. Finally his bill for one quarter was disallowed. During that quarter his wife had been seriously ill for much of the time, so that it was necessary for him to remove her to a city hospital for treatment, and he

himself was quite ill for a number of weeks. To meet this emergency, he had made an arrangement with another reputable physician of the county to attend to all of his practice, both for private individuals and under the contract with the county. Upon this, however, the Board of County Commissioners relied to defeat a recovery of his bill, contending that the contract called for the personal services of the plaintiff, and that he could not substitute another physician for himself, and maintain his claim for compensation against the county. But this contention, the court of appeals of Colorado thinks, was without any force. Under every reasonable construction of the contract, it holds—Appeal of Board of Commissioners of Prowers County vs. Bedell—it did not call for the personal services, in all cases, of the plaintiff (Bedell). All that it required was proper medical attention, medicines, etc., and there was no effort to show that the substitute physician was incompetent or inefficient. Furthermore, even if the contract had specifically called for the personal services of the plaintiff, the court holds that it would be unreasonable to claim that in case of his sickness or temporary absence he could not furnish the services of another physician without forfeiting his contract, provided that such other rendered proper services. Nor does it consider that there was any error in excluding evidence that the board had early in said quarter appointed another physician county physician and health officer, under a similar contract to the above. This, the court of appeals says, was entirely irrelevant to the issues in this case, and had no bearing whatever on it. The only question, it declares, was whether the plaintiff had complied or failed to comply with his contract. Then, the Board contended that this evidence was admissible, because the contract was in part for the services of the plaintiff as health officer, and that under the statute the Board had the power to remove that officer at pleasure. But, assuming this to be true, the court holds that, under the terms of the contract, it would not prevent the recovery by the plaintiff of the compensation agreed on, if he had fulfilled the obligations of his contract, for his services as county physician.

San Francisco.

THE MEDICAL COLLEGES.—Some friction has arisen between the medical department of the State University and Cooper Medical College on the one hand, and the recently incorporated College of Physicians and Surgeons on the other, over the distribution of the wards at the City and County Hospital. The two first named colleges have been on the most friendly footing at the hospital for some years, but the introduction of a new element into the question seems to be a disturbing factor. The superintendent of the hospital, Dr. Sussdorff, states that the representatives of the new college tried to run things with a high hand and decide for themselves, without regard to the Board of Health or the other medical interests, what they would have. Dr. Sussdorff objected and the matter was adjusted by the Board of Health itself, not altogether to the satisfaction of the new college. The College of Physicians and Surgeons is not regarded with great friendliness by the other colleges. The reason the older institutions give for this lack of cordiality is that they do not consider the standard of the newly incorporated school high enough for a modern medical school. The young rival of the older schools has been in existence but three or four years, has lower tuition fees than either of the others, and has already a goodly number of students on its rolls.

SANITARY REGULATIONS OF TROOPS.—Very stringent sanitary regulations have been formulated for the protection of the men of the Oregon regiment who have recently returned from Manila. The camp at the Presidio is to be placed under the direct charge of a regular army surgeon and all precautions taken to guard the men and the other troops camped at that post from introducing any contagion. Strenuous efforts are also being made to protect the returned soldiers from the rigors of the climate, as San Francisco weather is a most decided contrast to that which they have experienced for nearly two years past. Whether the men themselves will aid in the carrying out of the wise orders as to the wearing of overcoats, not riding on the outside of cars, being in bed early, etc., remains to be seen. As yet, however, very little sickness has developed among them, in spite of the fact that since their return the weather has been particularly bad, cold and fog prevailing most of the time.

London.

THE death of Sir William Henry Flower, the past week, has not only deprived English zoölogy of the last of that generation of giants, to which Darwin and Huxley were the standard-bearers—and out of which Alfred Russell Wallace has done his best to read himself, by his amazing relapses into spiritualism and antivivisection—but also the medical profession of one of its former heroes and ornaments. Like Huxley, he was not only trained, but actually began life in practice as a surgeon, in the army instead of, like his great colleague, in the navy. Educated first at University College, London, and later at the Middlesex Hospital, at the age of 23 he went out to the Crimea as assistant-surgeon to the Sixty-third Regiment. Through the entire campaign he served, to the permanent detriment of his health, but with such distinction as to receive two medals at its close. Returning to London he became demonstrator of anatomy and assistant-surgeon to the Middlesex Hospital, and in 1861 was appointed curator of the Hunterian Museum of the Royal College of Surgeons, in which position he won a world-wide reputation, and which he only relinquished to accept the directorship of the Natural History Department of the British Museum, twenty-three years later. This he held for fourteen years, until failing health compelled him to relinquish it, about a year ago. So that, although chiefly famous as a zoölogist, he was intimately connected with medicine throughout the greater part of his life. He was knighted, in recognition of his high scientific attainments, in 1887. Prof. Flower will be longest remembered by his excellent monograph on "The Horse," and his superb works, "Mammals Living and Extinct," and "The Osteology of the Mammalia." Although only 67 years of age he had been in failing health for many years, said to be due to a glycosuria, dating from the strain and hardships of the long Crimean campaign, which was even worse managed from a sanitary point of view than ours at Santiago.

OUR homeopathic brethren in London have been treating themselves to a celebration this week, on the occasion of the fiftieth anniversary of the Homeopathic Hospital. Their position here is much weaker and less prominent than with us. In the first place they all have to pass precisely the same examinations and take the same M.R.C.S. and L.R.C.P. degrees as the regular practitioner, so that the source of a man's diploma is no guide to his "school." Then they, none of them, place the name "homeopathic" on their door-plates or signs, or if they do they are decidedly looked down on by their brethren, so that often only their patients and their regular neighbors know that they are homeopaths. They are a mere corporal's guard in point of numbers, compared with our large and noisy army, although, as their orator on the recent occasion seemed to think, they may have some reason to congratulate themselves on the percentage of the increase in seventy years, from one lone representative in London in 1827. They seem actually proud of the fact that their only hospital had 11,000 patients in 1850, and 19,000 in 1898, an increase of 70 per cent. in forty-eight years. They are vaguely hopeful of a school, in connection with the coming University of London, but if they are content to wait for such a "Greek Kalends" sort of a date as this, regular medicine has little to fear.

THE Royal College of Surgeons is preparing to celebrate its centenary next year by (as noted in the JOURNAL, July 22, p.

2351, among other things, an application to the government authorities for a supplemental charter. In this the Council has already determined to ask for power to confer an honorary fellowship on distinguished members of the profession, who are not members of the College, said honorary Fellows not to exceed fifty in number at any one time. Now the Members of the College, who have been clamoring for recognition, and representation on the Council, are taking advantage of this proposed change to urge that a clause giving them this simple and long-refused justice should be added to the new charter. As it stands at present, the election of the Council and entire control of the affairs of the College, its library and museum is in the hands of the Fellows only, and as not more than a small percentage of the Members can afford either the time or the heavy fees required to secure the higher degree, it results in the great majority of those actually forming the College being ruled absolutely and without recourse by a small minority. Indeed, this was the frank intention of the original charter, and the tacit determination of every Council, and of most Fellows until quite recently, and although the Members have been organized for years past, and held enthusiastic and excited meetings every year to demand this right, the Council has always been able to shelter its own selfishness behind the charter and the alleged difficulty of getting any alterations made in it. Now, however, that they are actually proposing a new charter, for some of their own amendments, this excuse will no longer hold water, and it hardly seems possible that the Council can in decency refuse this act of simple justice much longer.

THE charity bazaar, organized by certain ladies of title, in aid of the building fund of Charing Cross Hospital, has proved a great success, netting the handsome sum of $75,000. There is nothing your true Briton will pay more handsomely for than an opportunity to shake hands with, or receive a smile from, a duchess. If he—or she—can only render himself interesting to such an exalted personage for a few minutes, as an object of plunder, he will be happy for a month, and submit to almost any amount of bleeding with Spartan stoicism, nay, even with enthusiasm. We suppose that it is justifiable to play on even the weaknesses of humanity in a good cause, at least so the professional keepers of our ethical ideals, the clergy, have always taught us by their example, but the spectacle of patrician dames hawking pamphlet "souvenirs" about a bazaar, at whatever price, from $3 to $50, which they could inveigle plebeians into paying for them, in the cause of medical education, is not one of which a great and influential profession can be especially proud, or regard as a dignified and appropriate means of securing funds for such a purpose.

THE tropical expedition of the enterprising, young Liverpool school is to start early in August, and consist of Major Donald Ross, Dr. Annett and two student assistants. Its destination is the west coast of Africa—Sierra Leone—and its object the most interesting one, experimenting on the possibility of exterminating the malaria-bearing species of mosquitoes from a certain limited district, or districts, by draining the marshes, covering the pools with petroleum, and other methods recommended. The heads of the expedition will return in October, but it is hoped to leave some of its members to continue the investigation, and that Major Ross will return early in the coming year. This certainly ought to stimulate us to see that similar experiments are carried out this summer and fall, on some of our smaller river-bottoms, or mosquito-infested "summer resorts."

THINGS "do moobe" in London at times and the time-honored fog is having a serious attack made on it at last. Sir William Richmond's vigorous crusade against the smoke nuisance has finally penetrated the judicial skull-cap, and magistrates are beginning to impose really serious fines on all factories, hotels, etc., where their chimneys are complained of, warning them that since smoke-consumers have been shown to be practical, unless they put one in at once they will be fined again on the next complaint. The big Charing Cross and Strand Electric Co. have just been made examples at two of their stations, and the effect will be most salutory.

A CURIOUS illustration of the truth of our quaint western saying, "it's dangerous to be safe," has just been afforded by a fatal bicycle accident at night, due to the excessive brilliancy of the acetylene lamp carried by the machine. A business man, returning home from a meeting at about 10 o'clock in the evening, was run into by a triplet while attempting to cross a broad street, and received a fracture of the skull base, from which he died in a few hours. The accident was seen by several witnesses, who were unanimous in testifying that the unfortunate man was perfectly sober, that the cyclists had given ample warning by sounding their gong, so that he seemed to be fully aware of their coming, and that the accident was entirely due to his becoming confused by the brilliant and dazzling rays of the huge acetylene lamp, so that in trying to spring out of its way he threw himself right in front of it. It is really time that our profession, members of which are aware of the curious confusing effect of the sudden appearance of a brilliant light at night, as illustrated by the way migrating birds dash against lighthouse windows, and moths plunge into lamp and candle flames, amounting to an apparent fascination, should emphatically protest against the absurd and dangerous brilliancy of the newer lamps, which the whim of the cyclist is leading him to affect. They are no addition whatever to his own safety, for the brighter they are the more narrowly they limit his view, and the blacker the shade into which everything outside of their beam is cast, and they are a serious menace to the foot passenger. Indeed, it is seriously to be doubted, and needs testing by careful experiment, whether after all the carrying of a lamp at all is really a protection or a danger to both cyclist and passenger. It certainly is much more difficult to estimate either the position or the rate of approach of a lighted than of an unlighted wheel, for the simple optical reason that the slight overlapping, or non-correspondence of the two retinal images, by which we estimate distance, is entirely eliminated, as we can see nothing of the approaching cycle but a black shadow behind a brilliant luminous point. All who have had experience, either as riders or walkers, in cities like Buffalo, N. Y., which require a bell but not a light, will testify that the streets are both pleasanter and safer, for both parties. The constant stream of fire-fly lights is so annoying and the difficulty of estimating their distance to fifty yards or so, is so great that the nervous strain of crossing a street is nearly trebled, while cyclists are almost unanimous in testifying that obstacles of all sorts are much better seen and more easily avoided without a lamp.

Queries and Minor Notes.

BACTERIOLOGY IN HIGH SCHOOLS.

ATHOL, MASS., July 8, 1899.

To the Editor:—Will you kindly tell me whether there is any book published on bacteriology or germ life that is suitable as a text-book for an elementary course in high schools? Do you know of any high schools where such a course is adopted? What is your opinion of the value of such a course? Yours truly, H. H. B.

ANSWER:—We know of no work especially adapted for high schools and doubt whether there is any general practice of teaching bacteriology in these institutions. So much depends on actual practical knowledge of the technic, that it appears to us doubtful whether any but the most general theoretic knowledge could be imparted in them. There are some small popular works, like Pruden's "Story of the Bacteria," and Conn's "Story of the Germ," but these are mere primers and hardly suitable for systematic instruction except of the most rudimentary kind. It would certainly seem to be a good thing if some general instruction on the subject, even if only rudimentary, could be imparted to the schools.

ACCREDITED MEDICAL COLLEGES.

GONZALES, TEXAS, July 11, 1899.

To the Editor:—Will you kindly send me a list of the accredited reputa-

ble medical colleges in the United States? What do you know of the diploma-mill in Chicago by the name of "The Independent" or "Collegium Independentiæ," or some such style? Respectfully, J. J. F.

ANSWER:—The "Appendix to the Twentieth Annual Report of the Illinois State Board of Health" contains a list of institutions recognized by the board. A copy of the list can perhaps be obtained from the secretary, Dr. J. A. Egan, Springfield, Ill.

The Independent Medical College of Chicago has no standing among reputable institutions, but is exclusively a diploma-mill. It has been proceeded against by the attorney-general, and under the new law it will undoubtedly soon be extinguished.

MEDICAL JOURNALS FOR DONATION.

CAFFEEN, ILL., July 6, 1899.

To the Editor:—I have complete files of the following medical periodicals: Phila. Med. and Surg. Reporter, 1870 to 1898; St. Louis Med. and Surg. Jour. 1867 to 1898; Obstetric Gaz., Cincinnati, first ten years; St. Louis Cour. of Med., 1885 to 1888; Chicago Med. Exam., 1863 to 1875; Va. Med. Semi-Monthly, 1889 to 1895; Compend Med. Sci. 1883-84-85; Annals of Surgery, 1889; "Braithwaites Retrospect," several vols.

These I will denote to any medical library, if any such can be found which will pay freight on them. I have them all properly filed and in good condition. Very truly yours, W. H. C.

The Public Service.

Movements of Army Medical Officers under orders from the Adjutant-General's Office, Washington, D. C., to and including July 20, 1899:

Charles H. Alden, colonel and asst. surgeon-general, U. S. A., to represent the Medical Department at the meeting of the Association of U. S. Military Surgeons at Kansas City, Mo., in September next.

Carl H. Andersen, acting asst.-surgeon, from Washington, D. C., to San Francisco, Cal., for duty in the Department of California.

Guy G. Bailey, acting asst.-surgeon, from Mackinac Island, Mich., to San Francisco, Cal., for temporary duty in the Department.

William Bowen, captain and asst.-surgeon, Vols., assigned to the 27th Vol. Infantry at Camp Meade, Pa.

Henry H. Bradley, acting asst.-surgeon, orders directing him to report for duty with the 19th Infantry revoked; the revocation subsequently annulled.

George H. Calkins, acting asst.-surgeon, from Tonawanda, N. Y., to San Francisco, Cal., for duty in the Department.

John Ryan Devereux, acting asst.-surgeon, from Fort Hamilton, N. Y., to Camp Meade, Pa., for duty there.

F. A. E. Disney, acting asst.-surgeon, from New York City to Camp Meade, Pa., to accompany the 19th Infantry to Manila, P. I.

Douglas F. Duval, lieutenant and asst.-surgeon, U. S. A., leave of absence granted.

Richard M. Fletcher, acting asst.-surgeon, from Camp Wardner, Idaho, to Fort Harrison, Mont.

John J. Gilhuley, acting asst.-surgeon, from Bridgeport, Conn., to San Francisco, Cal., for duty in the Department.

Richard S. Griswold, lieutenant and asst.-surgeon, Vols., assigned to the 26th Vol. Infantry at Plattsburg Barracks, N. Y.

Thomas D. Ingram, acting asst. surgeon, sick leave granted.

Frank M. Kemp, lieutenant and asst.-surgeon, U. S. A., now in the Philippine Islands, is relieved from further station at Vancouver Barracks, Wash.

James S. Kennedy, acting asst.-surgeon, from Columbus Barracks, Ohio, to Fort Sam Houston, Texas.

Paul Mazzuri, acting asst.-surgeon, from New Orleans, La., to Division of Cuba.

George P. Peed, lieutenant and asst.-surgeon, Vols., assigned to the 28th Vol. Infantry at Camp Meade, Pa.

Julius L. Powell, major and surgeon, U. S. A., delegated to the meeting of the Association of U. S. Military Surgeons at Kansas City, Mo., in September next.

L. B. Sandall, acting asst.-surgeon, from Au Sable, Mich., to San Francisco, Cal., for duty in the Department.

Paul F. Straub, captain and asst.-surgeon, U. S. A., now on duty in the Philippines, is relieved from further station at Camp Wrangel, Alaska.

George H. Torney, major and surgeon, U. S. A., delegate to the meeting of the Association of U. S. Military Surgeons at Kansas City, Mo., in September next.

Starling S. Wilcox, acting asst.-surgeon, to Columbus Barracks, Ohio.

Marine-Hospital Changes.—Official List of Changes of Station, and Duties of Commissioned and Non-Commissioned Officers of the U.S. Marine-Hospital Service, for the seven days ended July 20, 1899.

Surgeon Preston H. Bailhache, to proceed to New York City for special temporary duty in the purveying depot.

Surgeon C. E., Banks, relieved from duty at Washington, D. C., and detailed as medical purveyor of the service at New York City.

P. A. Surgeon H. D. Geddings, to proceed to New York City for special temporary duty.

P. A. Surgeon M. J. Rosenau, detailed as inspecting quarantine officer for the island of Cuba.

Asst.-Surgeon L. D. Fricks, to proceed to the Brunswick Quarantine Station, Brunswick, Ga., for special temporary duty.

Asst.-Surgeon W. R. McAdam, granted seven days extension of leave of absence.

Asst.-Surgeon T. F. Richardson, relieved from duty at the Immigration Depot, New York City, and directed to proceed to Cienfuegos, Cuba, for temporary duty.

Asst.-Surgeon F. J. Thornbury, to proceed to Point Pleasant, N. J., for special temporary duty.

Sanitary Inspector R. E. L. Burford, granted leave of absence for seven days.

APPOINTMENTS.

Alanson Weeks, of Michigan to be acting asst.-surgeon, U. S. Marine Hospital Service, for duty at the port of Chicago.

Health Reports.—The following cases of smallpox, yellow fever, cholera and plague, have been reported to the Surgeon-General of the U. S. Marine-Hospital Service, during the week ended July 22, 1899:

SMALLPOX—UNITED STATES.

California: Oakland, June 3 to 24, 2 cases, 1 death.
Connecticut: Stamford, July, 1 case.
District of Columbia: Washington, July 12, last two cases discharged.
Georgia: Montgomery County, July 15, 9 cases.
Kentucky: Louisville, July 6 to 13, 1 case.
Maryland: Baltimore, July 5 to 15, 1 case.
Massachusetts: Boston, July 8 to 15, 1 case.
Texas: Sabine Pass, July 8 to 15, 2 cases.
Washington: Aimira, July 3, 9 cases; Spokane, July 1 to 8, 3 cases; Tacoma, July 1 to 8, 2 cases.

SMALLPOX—FOREIGN.

Austria: Hungary, Budapest, June 18 to July 2, 2 cases, 1 death; Vienna, June 24 to July 1, 1 death.
Belgium: Antwerp, June 17 to July 1, 4 cases, 1 death; Ghent, June 27 to July 1, 1 case.
Ecuador: Guayaquil, June 3 to 10, 1 case.
England: London, June 27 to July 1, 1 case.
Egypt: Cairo, June 3 to 17, 4 deaths.
France: Nantes, June 1 to 30, 1 case.
Greece: Athens, June 27 to July 1, 23 cases, 9 deaths.
India: Bombay, June 13 to 29, 6 deaths; Calcutta June 3, to 10, 1 death.
Mexico: Mexico, July 2 to 9, 7 cases, 9 deaths; Nuevo Laredo, July 1 to 8, 2 deaths.
Russia: Moscow, June 10 to 17, 16 cases, 8 deaths; Odessa, June 17 to 24, 2 deaths; St. Petersburg, June 16 to July 1, 34 cases, 7 deaths; Warsaw, June 3 to 24, 4 deaths.
Straits Settlements: Singapore, May 1 to June 10, 17 deaths.
Turkey: Constantinople, July 9 to 19, 4 deaths.

YELLOW FEVER.

Brazil: Bahia, June 17 to July 1, 65 cases, 31 deaths.
Colombia: Barranquilla, June 10 to 24, 2 cases, 2 deaths; Panama, June 27 to July 10, 17 cases, 9 deaths.
Costa Rica: Punta Aranas, July 10, reported.
Cuba: Santiago June 10 to 17, 6 cases, 1 death.
Mexico: Mexico, July 6 to 13, 28 deaths; Vera Cruz, June 1 to July 6, 37 cases, 215 deaths.
San Salvador: San Salvador, July 1, 1 case from Guatemala.

CHOLERA.

India: Bombay, June 13 to 20, 1 death; Calcutta, June 3 to 10, 10 deaths; Madras, June 3 to 9, 1 death.

PLAGUE.

Africa: French Ivory Coast, June 7, 300 deaths.
Egypt: Alexandria, June 20, 42 cases to date, no deaths.
India: Bombay, June 13 to 20, 53 deaths; Calcutta, June 3 to 10, 21 deaths.
Japan: Formosa, Tamsui, May 3 to 24, 318 cases, 225 deaths.
Persia: Bushire, present.
Straits Settlements: Penang, January 1 to June 2, 20 cases, 17 deaths; Singapore, present.

CHANGE OF ADDRESS.

Bradley, C. H., from 9 W. 219 to 2009 4th Av. So., Minneapolis, Minn.
Briggs, C. T., from City Hospt. to 191 Island Av., Minneapolis, Minn.
Curtis, A. B., from Ferry to Maple City, Mich.
Church, W. F., from Austin, Ill., to Delphi, Ind.
Curtis, W. H., from Greencastle to Columbus, Ind.
Dotterweich, F. V., from Cleveland to Ashland, Ohio.
Eastman, J. R., from 315 to 249 N. Pa., Indianapolis, Ind.
Gray, G. A., from Minneapolis, Minn., to Mohawk Blk., Spokane, Wash.
Gallagher, M. L., from 650 Adams to 144 Oakwood Boul., Chicago.
Harrison, L. H., from Fairfield to Canandaigua, Mich.
Hughes, T. D., from Arbroth to Iberia, La.
Hardy, J. A., from Richmond to Kilmonoch, Va.
Johnson, J. Mc., from Louisville, Ky., to Birch Tree, Mo.
Johnson, A. E., from 1744 N. Clark to 349 W. Chicago Av., Chicago.
Knox, J. T., from 415 Broadway to 22 W. 7th, Cincinnati, Ohio.
Kimball, A. L., from Ann Arbor to Racine, Mich.
Kellogg, G. M., from 814 N. Clark to 350 La Salle Av., Chicago.
Kirby, H. W., from Pallid to Airheart Blk., Cripple Creek, Colo.
Lewellen, P. W., from Brookfield, Mo., to Clarinda, Iowa.
Long, R. D., from Wabash Av. and 31st St. to 7100 S. Chicago Av., Chicago.
Landers, A. J., from Louisville, Ky., to Ohatchie, Ala.
McQueeney, F. J., from 33 W. Dedham to 46 Dartmouth St., Boston, Mass.
Miller, W. E., from Omaha, Neb., to Sherman, S. D.
Mather, E., from 22 Adams Av., W., to 319 Woodward Av., Detroit, Mich.
Meade, F. N., from Bristow to Cedar Falls, Iowa.
Norris, M. D., from Baltimore to Eldersburg, Md.
Oppenheimer, H. S., from 49 E. 23d St. to 16 E. 32d, New York City.
Quinn, W. E., from Chicago to Lyndon, Kans.
Rosser, J. C., from Thompson, N. D., to Crookston, Minn.
Ramsey, A., from Richmond to Chestnut Level, Va.
Russell, H. R., from Chicago to Stewartville, Minn.
Roberts, N., from Nevada Bld. to 3712 Williams, Denver, Colo.
Stephenson, W. J., from Winnebago, Neb., to Leech Lake Ind. Agency, Walker, Minn.
Trotter, J. R., from Marshalltown to Melbourne, Iowa.
Toohey, A. F., from Storm Lake, Iowa, to Hubbard, Neb.
White, H. B., from Abbeville to Gueydan, La.
Weeks, A., from Ann Arbor to Allegan, Mich.
Wiggin, T. B., from 4700 Grand Boul. to 690 E. 48th Pl., Chicago.